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Per. 2333 d. $\frac{27}{38(2).[1]}$

Per. 2333 d. 21
38(2).[1]

THE
REPORTS OF THE COMMITTEES

OF THE

SENATE OF THE UNITED STATES

FOR THE

SECOND SESSION THIRTY-EIGHTH CONGRESS,

1864-'65.



IN FOUR VOLUMES.

Volume 1.....	No. 106 to 141.
Volume 2.....	No. 142. Part 1, Conduct of the War.
Volume 3.....	No. 142. Part 2, Conduct of the War.
Volume 4.....	No. 142. Part 3, Conduct of the War.

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OF THE
SENATE OF THE UNITED STATES
FOR THE
SECOND SESSION OF THE THIRTY-EIGHTH CONGRESS,
AND THE
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Commencing March 4, 1865.

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REPORT

OF THE

COMMITTEE ON MILITARY AFFAIRS AND THE MILITIA,

ON

The bill (H. R. 586) to drop from the rolls of the army unemployed general officers.

[To accompany bill H. R. No. 586.]

DECEMBER 22, 1864.—Submitted and ordered to be printed.

The Committee on Military Affairs and the Militia, to whom was referred House resolution No. 586, being an act to drop from the rolls of the army unemployed general officers, beg leave to report :

That many general officers in the regular and volunteer forces of the army of the United States have been and now are unemployed or not on duty corresponding with their rank, thus holding commissions and drawing pay and allowances without any equivalent services rendered to the government ; and, at the the same time, these officers stand in the way of the promotion and consequent increase of compensation of the officers of inferior grade who are performing the duties proper to such general officers. This is burdensome to the treasury, unjust to meritorious officers in the field, and should be speedily remedied. The right and power to create vacancies in the rolls of the army, and to fill such vacancies by appointments and promotions, are vested in the President of the United States. No additional powers are asked for by the President, nor demanded by the needs of the service.

The committee are unanimously of the opinion that economy, justice, and the efficiency and general interests of the military service alike demand that where general officers in the regular and volunteer forces of the United States are found to be unfit for commands, and who are consequently unemployed or employed on duty not corresponding to their rank, they should be mustered out of the service, and that the vacancies thus created should be filled by new promotions and appointments, in order that the officers of an inferior grade who are performing the duties proper to such general officers may be promoted to the rank and receive the pay, allowances, and emoluments of such general officers. But the committee are of opinion that no fixed, inflexible rule of discrimination, such as is embodied in the joint resolution of the House of Representatives, could be adopted and executed consistently with equal and exact justice toward individual officers and with the interests of the military service of the country. Justice and the public interests demand that the power to muster general officers out of the service of the United States should be exercised with much discrimination and care. The power of removal and the responsibility of action being now fully and completely vested in the President, the committee unanimously report against the passage of the joint resolution of the House of Representatives.

IN THE SENATE OF THE UNITED STATES.

JANUARY 18, 1865.—Ordered to be printed.

Mr. BROWN made the following

REPORT.

(To accompany bill S. No. 359.)

The Committee on Military Affairs and the Militia, having had under consideration a bill "to reimburse the State of Missouri for moneys expended for the United States," beg leave to report the same back, with a unanimous recommendation in favor of its passage.

This is a bill designed, as its title expresses, to reimburse the State of Missouri for moneys expended in equipping, subsisting, and paying militia troops called into service since the 24th August, 1861, to act in concert with the United States forces, and under the authority of United States officers, in maintaining the peace against guerilla bands, and in repelling hostile invasion. The amount appropriated is four millions of dollars, and it is provided that a commission shall first examine and approve all the vouchers for the outlay of the State of Missouri before any payment shall be made. It prescribes likewise that the amount of the direct tax due to the United States shall be deducted from the aggregate indebtedness.

Your committee have had before them evidences establishing the general correctness of this claim, evidences embracing the sworn returns of the officers of the State, as to the amounts paid out by them, and still due, and unpaid, for militia service since the time specified; also abstracts showing the regiments, number of men furnished by each, and the aggregate of days actually engaged, verified by affidavit of the adjutant general of Missouri; also the proclamations of Governor Gamble and Governor Hall calling them out for the purposes named, and placing them under the control of the United States officers in command; also numerous orders from department headquarters, from the general-in-chief, and from the Secretary of War recognizing their service, and making disposition of the same, and attesting the fact of relief thus furnished at critical conjunctures, or volunteer troops thereby rendered disposable, who were sent to points of imminent danger. All these taken together sufficiently confirm the right of the State to reimbursement, upon grounds established by many precedents not necessary to be here reviewed. The whole number of militia troops thus called into service prior to January 1, 1864, was 52,165, and their terms of service extended from twenty days to nine months. Since that time, and especially during the last summer, a large militia force was likewise employed resisting a guerilla warfare in many counties, and repelling the inroad of a confederate army under General Price. The precise figures cannot yet be accurately set forth; but that the militia participated in all the arduous toil and danger of that campaign, and rendered signal service in many engagements throughout the State is abundantly substantiated. Indeed, it may be stated as

a fact limited by few, if any, exceptions, that they were called out only in pressing emergencies by the commander of the department, or at his request, and to supply deficiencies in the federal forces in that State, and have at all times been used for such purposes. Nor will it detract anything from the merit of the services rendered, when it is known that many of those whose families were entirely dependent on them for support are still needy for want of a payment which the State has no means of making. On this point the report of the auditor of Missouri, rendered to the legislature at its present session, remarks :

"There is also a large number of our citizen soldiery who have been engaged in active service who have never been paid, and it is incumbent upon your body to provide means for their payment. Many of them and their families are now suffering for the most common necessities of life, produced by the non-payment of their past dues by the State."

The effectiveness of these troops called out during the various periods of conflict in Missouri, with either organized or guerilla rebel forces, is attested by General Schofield in a communication to the President, under date of October 20, 1863. He says :

"The services of the enrolled militia have been of great value, not only during the summer of 1862, when they were first organized, but also during the present year."

"The ten provisional regiments which the governor organized for continuous service, and placed under my command, enabled me to relieve an equal force of United States troops, and send them to General Grant. On several occasions I have called out from one to four additional regiments for temporary service, to meet emergencies as they have arisen. With a few exceptions they have responded with promptness and alacrity, and have done good service."

General Curtis, in a communication dated January 4, 1863, also says :

"The demand for troops below has induced me to send out almost everything; so there is only Merrill's regiment of United States troops remaining north of the river. This is only partially armed. We must rely, therefore, mainly on the enrolled militia."

Similar testimony was rendered by General Rozecrans whilst commanding the department of Missouri, in letters addressed by him to the governor of the State.

Your committee would represent that this circumstance of their effectiveness in the past, to supply the place of troops concentrated elsewhere, and repress sudden incursions, renders it the more important that the same reliance should not be destroyed for the future, but, on the contrary, that measures should be timely taken to secure the continued efficiency of the militia organization of that State. It is believed, however, that this can only be rendered certain by the prompt passage of the bill herewith recommended, as the financial condition of Missouri, and the heavy embarrassment resting upon it from the issue of military bonds, make it very difficult to bear such burdens any longer. It was presented before your committee that the amount expended by the State of Missouri, in payment of the militia prior to July 1, 1864, was more than four millions of dollars, and there was still in arrears to them at that time two millions more. This indebtedness has been increased by amounts due for militia services rendered since the date mentioned. The State, however, was dependent upon an issue of defence warrants, Union military bonds, and such sums as might be borrowed from its own banks, to make these large payments, having but little money in its treasury when the rebellion occurred, the collection of taxes being rendered almost impossible thereafter in the disturbed condition of large sections, and its immense bonded railway debt, and failure to meet accruing interest, closing to it the usual avenues for negotiating loans. There were accordingly issued under authority of the convention defence warrants to the amount of \$1,374,480, and under authority of the legislature Union military

bonds to the amount of \$3,000,000. The sum of \$150,000 was borrowed of the several banks in the city of St. Louis.

To make these bonds and warrants available, however, it was necessary that a value and convertibility should be at once given to them. Consequently, the defence warrants were made receivable for all taxes, and the Union military bonds for fifty per cent. of the taxes. At the same time a fund was created to receive the amount when repaid by the United States to the State for expenditure in this behalf, which was charged with retiring the bonds and warrants issued.

It thus appears at a glance how incapacitated the State of Missouri is to make any further effort to retrieve its financial condition or maintain longer with any efficiency its militia system until this act of justice, the repayment of her outlay and indebtedness for militia services, is performed by the United States. Her treasury, instead of receiving money as payment of taxes, receives now bonds instead; the amount of bonds being large enough to embarrass the revenue of several years, and the limit of the issuing of such military scrip having been very nearly reached, as is proven by its depreciation in the market. A further resort to this mode would in all likelihood give to the soldier what would be of little value to him, and might prove ruinous to the State; meanwhile all the machinery of civil government would be impeded for want of means to pay its necessary expenses. The impossibility of resorting to a more onerous taxation there, and on a scale sufficient to remedy this unfortunate condition, needs scarcely to be referred to, inasmuch as what that State has suffered from its exposed condition and the ravages of armies, and the interruption of all its industrial pursuits, forbids such an idea from being entertained.

Your committee concur, therefore, in the belief that if this measure were considered simply as a military appropriation, it would be advisable as enabling the State of Missouri to place itself in an attitude of self-defence capable of enforcing peace and protection to loyal men within her bounds, and so reorganizing and making effective her militia system as to render the risk too imminent for renewed raids to be undertaken against its soil, and also to make disposable forces of the United States now retained there and which would be sent elsewhere if the feeling of security were once engendered; but when, in connexion with such a view, it is considered how many other reasons, both of expediency and justice, unite in commending this measure to your favorable regard, how loyal has been the State of Missouri in its representative capacity through all the trial of this war, and how frankly its population has entered into sympathy with the national cause in all its aspects and developments, it is believed that no hesitancy will be felt in approving an appropriation which, though large in amount, yet is in reality less than the actual cost to that State of the advances thus made to the military service of the government of the United States.

Accompanying this report are exhibits set forth in connexion with a former presentation of the same subject to the attention of Congress, and also detailed statements from the pay department and the adjutant general's office of the State of Missouri, made up to the latest dates practicable.

All of which is respectfully submitted.

EXHIBIT A.

Governor's proclamation.

The powers of the civil authorities being insufficient to protect the lives and property of the citizens of the State, I, Hamilton R. Gamble, governor of the State of Missouri, do hereby call into the service of the State forty-two thousand men of the militia of the State, assigning six thousand as the quota for

each military district, which is the same as a congressional district. The force thus called into the service will be, as far as possible, a volunteer force, and will consist of ten thousand cavalry and thirty-two thousand infantry. If the number volunteering should exceed this requisition, the excess will be held as a reserve corps. If there should be a deficiency, it may become necessary to resort to a draft. The adjutant general will issue to the division inspector of the military districts the order necessary to carry this requisition into effect. The force called out will be for six months, unless peace in the State be sooner restored. Arms will be furnished as rapidly as they can be had.

Given under my hand and the seal of the State, at Jefferson City, this 24th of August, 1861.

H. R. GAMBLE.

By the governor:

M. OLIVER, *Secretary of State.*

EXHIBIT B.

Statement showing the amount paid and amount due, and remaining unpaid, to the different organizations of enrolled Missouri militia prior to July 1, 1864.

Regiments.	Amount paid.	Amount unpaid.	Regiments.	Amount paid.	Amount unpaid.
1st regiment	\$6,328 27	\$672 26	60th regiment	\$133,315 01	\$27,051 44
2d regiment	387 35	603 13	61st regiment	34,367 36	3,165 06
3d regiment	238 50	1,910 25	62d regiment	32,956 54	6,437 71
4th regiment	19,632 28	286 86	63d regiment	377 49	8,241 39
5th regiment	6,471 12	438 98	64th regiment	7,581 03	1,605 52
6th regiment	7,468 24		65th regiment	59,726 15	7,061 99
7th regiment	11,585 69	2,403 38	66th regiment	26,287 54	10,679 20
8th regiment	238 50		67th regiment	40,279 68	4,334 69
9th regiment	237 00	886 20	68th regiment	31,428 50	4,796 97
10th regiment	8,074 36	773 07	69th regiment	41,998 86	9,248 39
11th regiment	16,848 58		70th regiment	19,495 62	7,109 52
12th regiment	7,423 61	359 39	71st regiment	60,754 74	11,474 54
13th regiment	288 34		72d regiment	87,243 40	5,146 03
14th regiment	237 00		73d regiment	63,219 24	26,176 40
22d regiment	110 14		74th regiment	125,139 67	11,336 65
23d regiment	99 10		75th regiment	10,514 45	1,415 11
24th regiment	119,736 75	6,091 93	76th regiment	78,638 51	16,118 65
26th regiment	130,850 34	21,906 93	77th regiment	19,327 81	23,053 68
27th regiment	1,893 57	21,448 49	80th regiment	5,921 56	2,753 71
28th regiment	22,121 78	4,368 85	Callaway county batt.	7,283 20	2,067 63
29th regiment	20,686 13	3,335 64	City Post band	4,242 51	7,988 54
30th regiment	43,481 71	2,161 85	Pike county batt.	17,072 82	1,266 96
31st regiment	14,784 25	7,634 23	Jefferson county batt.	1,759 29	38 00
32d regiment	17,919 44	3,520 53	Mounted city guard	1,500 10	112 00
33d regiment	38,343 60	14,683 38	Johnson county batt.	653 40	
34th regiment	10,900 91	3,798 93	Howard county batt.	7,485 44	1,291 35
35th regiment	38,607 32	4,107 84	Marion county batt.	4,705 68	5,620 03
36th regiment	42,614 18	9,331 92	Buchanan and De Kalb county batt.		3,111 83
37th regiment	24,948 11	1,679 11	Brigadier general and staff officers	48,666 55	
38th regiment	47,899 21	36,575 22	Pay department enrolled Missouri militia	26,106 50	
39th regiment	86,740 47	9,128 08	1st provisional	101,271 10	32,037 55
40th regiment	13,930 02	17,909 78	2d provisional	61,507 07	101,878 57
41st regiment	71,116 50	8,698 80	3d provisional	21,512 30	83,533 20
42d regiment	84,199 86	15,164 78	4th provisional	37,369 03	141,685 54
43d regiment	8,315 84	7,561 70	5th provisional	80,526 90	47,236 77
44th regiment	16,117 43	5,021 78	6th provisional	61,780 36	44,421 04
45th regiment	58,567 77	3,074 84	7th provisional	79,895 47	27,415 12
46th regiment	54,894 48	4,832 37	8th provisional	76,137 51	14,120 85
47th regiment	79,625 62	4,645 40	9th provisional	66,281 61	4,751 75
48th regiment	37,560 40	6,034 23	10th provisional		1,513 53
49th regiment	36,100 05	2,032 72	81st regiment		3,706 52
50th regiment	55,863 77	5,948 31	82d regiment		9,457 50
51st regiment	54,707 99	2,434 28	Lieutenant Axline's company		2,277 97
53d regiment	44,945 25	3,603 36			
54th regiment	9,394 52	4,701 99			
55th regiment	1,470 64	5,335 51			
56th regiment	25,716 80	2,601 41			
57th regiment	6,101 68	8,900 20			
58th regiment		3,009 79			
59th regiment		1,088 39			
		3,867 00	Total	3,009,509 47	997,410 02

RECAPITULATION.

Amount paid to the enrolled Missouri militia	\$3,009,509 47
Amount unpaid enrolled Missouri militia	997,410 02
Total	4,006,919 49

I certify, on honor, that there has been paid to the enrolled Missouri militia for active service in Union military bonds and defence warrants three million nine thousand five hundred and nine dollars and forty-seven cents, (\$3,009,509 47.)

MELVILLE SAWYER,
Deputy Paymaster General of Missouri.

JEFFERSON CITY, December 7, 1864.

EXHIBIT C.

Dr. *The State of Missouri in account with Silas Woodson, paymaster Missouri State militia.* Cr.

To pay	\$265, 221 08	1862.	By defence warrants.....	\$112, 040 00
To subsistence.....	38, 602 70	February 5	By defence warrants.....	37, 960 00
To forage.....	7, 918 16	19	By defence warrants.....	75, 000 00
To clothing.....	2, 265 55	March 5	By defence warrants.....	75, 000 00
		15	By defence warrants.....	20, 010 00
		29	By defence warrants.....	
	314, 007 49			
To amount paid troops, as above	314, 007 49			
To amount paid four clerks, as per bill	695 41			
To amount discount for change.....	395 91			
To amount S. Woodson, 4,835 miles' travel.....	485 50			
To amount S. Woodson, paymaster, as per account.....	820 83			
	316, 405 14			
To amount (less) overpaid E. Parrott.....	56 45			
	316, 348 69			
To balance on hand and returned in defence warrants.....	3, 661 31			
Total.....	320, 010 00			320, 010 00

I do hereby certify that the above is a true account of all public money received by me, and that the disbursements have been faithfully made.

SILAS WOODSON,
Paymaster Missouri State Militia.

JUNE 7, 1862.

I hereby certify the above to be a true and correct copy of the abstract of payments now on file in my office.

Witness my hand and seal of office this 29th day of February, 1864.

[SEAL.]

WM. S. MOSELY,
Auditor of Public Accounts, State of Missouri.

EXHIBIT E.

SIR: By direction of his excellency the governor I hand you herewith a statement of my cash disbursements and a memorandum of amounts paid by other officers in my department that have come to my knowledge, the object being to show, as near as possible, the amount due to the State of Missouri from the federal government for expenses incurred in the quartermaster's department. All payments made by me have been reported to the auditors, and approved. I have classified the payments as nearly as practicable from my cash-book, without taking each cash abstract separate.

Paid to private surgeons.....	\$6,354 00
Paid postage and telegraphing.....	677 33
Paid labor at headquarters.....	535 53
Paid fuel, gas, &c.....	1,509 53
Paid vouchers given by other officers.....	9,109 89
Paid services in adjutant general's and quartermaster's offices...	4,203 37
Paid stationery.....	550 17
Paid office furniture.....	338 44
Paid printing and blank books.....	5,620 00
Paid freight and transportation.....	681 82
Paid repairing and cleaning arms.....	2,099 85
Paid rent of headquarters, wareroom, &c.....	2,936 01
Paid carpenter's work, making cases, &c.....	670 55
Paid quartermaster's stores.....	1,970 57
Paid for clothing, camp and garrison equipage.....	34,071 81
Paid for subsistence.....	6,810 98
Total disbursement in treasury notes.....	78,140 15
Paid in defence warrants:	
Paid vouchers given by other officers.....	40,861 65
Paid for quartermaster's stores.....	105 00
Paid for clothing, camp and garrison equipage.....	192,946 30
Paid for subsistence.....	31,261 51
Colonel Burnham paid out in defence warrants about.....	116,000 00
Arms were purchased by the State and paid for, amounting to..	150,000 00
Total.....	609,314 61
Purchases made by me and orders given on Carlos Greeley, esq.,	
United States disbursing officer, remaining unpaid, about....	75,000 00
There are claims for forage and subsistence, due to loyal persons,	
unpaid, estimated at, (no means of knowing the exact amount,)	300,000 00
Total.....	984,314 61

The above shows the amount that should be refunded to the State, as near as it is possible to estimate it from records now in my office to January 1, 1864.

I am, very respectfully, your obedient servant,

E. ANSON MORE,

Quartermaster General of Missouri.

Lieutenant Colonel SAWYER,
Deputy Paymaster General.

EXHIBIT F.

Special Order, }
No. 101. }

HEADQUARTERS STATE OF MISSOURI,
Adjutant General's Office, St. Louis, July 22, 1862.

The existence of numerous bands of guerillas in different parts of the State, who are engaged in robbing and murdering peaceable citizens for no other cause than that such citizens are loyal to the government under which they have always lived, renders it necessary that the most stringent measures be adopted to punish all such crimes and to destroy such bands.

Brigadier General John M. Schofield, in command of the Missouri State militia, is hereby authorized to organize the entire militia of the State into companies, regiments, and brigades, and to order into active service such portions of the force thus organized as he may judge necessary for the purpose of putting down all marauders and defending the peaceable citizens of the State.

H. R. GAMBLE,
Governor of State of Missouri.

EXHIBIT G.

General Orders, }
No. 19. }

HEADQUARTERS MISSOURI STATE MILITIA,
Adjutant General's Office, St. Louis, July 25, 1862.

An immediate organization of all the militia in Missouri is hereby ordered for the purpose of exterminating the guerillas that infest the State.

Every able-bodied man capable of bearing arms, and subject to military duty, is hereby ordered to repair, without delay, to the nearest military post, and report for duty to the commanding officer. Every man will bring with him whatever arms he may have or can procure, and a good horse if he has one.

All arms and ammunition, of whatsoever kinds, and wherever found, not in the hands of the loyal militia, will be taken possession of by the latter, and used for the public defence. Those who have no arms, and cannot procure them in the above manner, will be supplied as quickly as possible by the ordnance department.

The militiamen who will assemble at any post will be immediately enrolled and organized into companies, elect their officers, and be sworn into service, in accordance with the militia laws of the State, under the immediate superintendence of the commanding officer of the post.

The militia thus organized will be governed by the articles of war and army regulations, and will be subject to duty under the orders of the commanding officers of the post where they are enrolled, or such other officers of the United States troops or Missouri militia, regularly mustered into service, as may be assigned to their command.

Commanding officers will report from day to day, by telegraph, when practicable, the progress of enrolment at their posts, and the number of arms required.

Six days, after the date of this order, are allowed for every man fit for military duty to report to the commanding officer of the nearest military post, and be enrolled. All persons so enrolled will be regarded as belonging to the active militia of the State until further orders.

The commanding officer of a post, or any higher commander, is authorized to give furloughs to such men of this militia force as cannot be absent from their ordinary business without serious detriment, or such as are not needed for present service. Such leaves of absence will in no case be for a longer period than ten days, and may be revoked at any time, or renewed at their expiration, at the discretion of the officer granting them.

The same strict discipline and obedience to orders will be enforced among the militia in service under this order as among other troops, and commanding officers will be held strictly responsible for all unauthorized acts of the men.

The enrolment and organization of the militia of St. Louis will be under the direction of Colonel Lewis Merrill, commanding St. Louis division, who will establish rendezvous, appoint enrolling officers, and make such regulations as he shall deem necessary.

By order of Brigadier General Schofield :

C. W. MARSH.
Assistant Adjutant General.

H.—Statement showing the number of enrolled Missouri militia in active service, by whose order, or at whose request, and the average number of days served prior to July 1, 1864.

Regiment.	No. of companies.	Aggregate number of men in service.	Period.	Average number of days in service.	By whom ordered, or at whose request.
1st regiment...	6	386	From Aug., 1862, to Oct., 1862.	23	General Schofield.
2d regiment...	3	227	From Aug., 1862, to Nov., 1862.	25	General Schofield.
4th regiment...	10	836	From April, 1863, to July, 1863.	50	General Schofield.
5th regiment...	8	452	From April, 1863, to May, 1863.	20	General Schofield.
6th regiment...	10	507	From June, 1863, to July, 1863.	28	General Schofield.
7th regiment...	7	442	From Aug., 1862, to May, 1863.	52	General Schofield.
10th regiment...	10	463	From June, 1863, to July, 1863.	28	General Schofield.
11th regiment...	10	624	From April, 1863, to July, 1863.	51	General Schofield.
12th regiment...	10	539	From April, 1863, to May, 1863.	22	General Schofield.
25th regiment...	10	1,020	From July, 1862, to April, 1863.	145	General Schofield.
26th regiment...	10	1,116	From July, 1862, to April, 1863.	187	General Brown.
27th regiment...	11	873	From Aug., 1862, to June, 1863.	49	General Schofield.
28th regiment...	12	963	From Sept., 1862, to May, 1863.	32	General Totten.
29th regiment...	10	646	From Aug., 1862, to April, 1863.	48	General Schofield.
30th regiment...	8	653	From July, 1862, to April, 1863.	75	General Loan.
31st regiment...	11	907	From Aug., 1862, to April, 1863.	35	General Schofield.
32d regiment...	9	662	From July, 1862, to May, 1863.	38	General Davidson.
33d regiment...	10	975	From July, 1862, to April, 1863.	63	General Schofield.
34th regiment...	11	757	From Aug., 1862, to May, 1863.	32	General Schofield.
35th regiment...	10	666	From Aug., 1862, to April, 1863.	75	General Schofield.
36th regiment...	10	731	From July, 1862, to April, 1863.	84	General Loan.
37th regiment...	9	809	From July, 1862, to April, 1863.	37	General Schofield.
38th regiment...	3	266	From Aug., 1862, to Mar., 1863.	210	General Merrill.
39th regiment...	8	647	From Aug., 1862, to July, 1863.	147	General Loan.
40th regiment...	12	1,055	From July, 1862, to Oct., 1863.	128	General Schofield.
41st regiment...	9	738	From July, 1862, to April, 1863.	66	General Schofield.
42d regiment...	10	1,037	From July, 1862, to Nov., 1863.	142	General Totten.
43d regiment...	12	1,010	From July, 1862, to May, 1863.	105	General Totten.
44th regiment...	10	496	From Aug., 1862, to April, 1863.	35	General Schofield.
45th regiment...	9	687	From Aug., 1862, to June, 1863.	37	General Merrill.
46th regiment...	10	1,046	From Aug., 1862, to July, 1863.	100	General Schofield.
47th regiment...	9	811	From July, 1862, to Oct., 1863.	122	General Totten.
48th regiment...	9	713	From July, 1862, to April, 1863.	123	General Schofield.
49th regiment...	10	799	From July, 1862, to April, 1863.	62	General Schofield.
50th regiment...	10	873	From July, 1862, to April, 1863.	75	General Schofield.
51st regiment...	10	789	From July, 1862, to April, 1863.	75	General Schofield.
52d regiment...	9	706	From July, 1862, to April, 1863.	105	General Schofield.
53d regiment...	7	605	From July, 1862, to June, 1863.	105	General Schofield.
54th regiment...	11	673	From Aug., 1862, to May, 1863.	38	General Schofield.
55th regiment...	2	129	From Aug., 1862, to Sept., 1862.	18	General Davidson.
56th regiment...	9	933	From July, 1862, to May, 1863.	61	General Davidson.
57th regiment...	11	519	From Aug., 1862, to April, 1863.	18	General Schofield.
58th regiment...	1	42	From Aug., 1862, to April, 1863.	30	General Loan.
59th regiment...	1	73	From Aug., 1862, to June, 1863.	115	General Totten.
60th regiment...	12	1,200	From July, 1862, to Aug., 1863.	186	General Loan.

Statement showing the number of enrolled Missouri militia, &c.—Continued.

Regiment.	No. of companies.	Aggregate number of men in service.	Period.	Average number of days in service.	By whose order, or at whose request.
61st regiment..	6	434	From Oct., 1862, to June, 1863	124	General Merrill.
62d regiment..	11	770	From July, 1862, to Aug., 1863	65	General Merrill.
63d regiment..	6	445	From Aug., 1862, to May, 1863	30	Colonel Glover.
64th regiment..	12	665	From Apr., 1863, to May, 1863	24	General Curtis.
65th regiment..	9	620	From July, 1862, to Apr., 1863	100	General Schofield.
66th regiment..	9	711	From Aug., 1862, to Feb., 1864	77	General Schofield.
67th regiment..	7	593	From July, 1862, to Feb., 1864	99	General Schofield.
68th regiment..	9	548	From July, 1862, to June, 1863	90	General Schofield.
69th regiment..	10	711	From July, 1862, to Sept., 1863	109	General Schofield.
70th regiment..	8	339	From July, 1862, to April, 1863	91	General Schofield.
71st regiment..	9	731	From Aug., 1862, to Oct., 1863	143	Colonel Houston.
72d regiment..	10	993	From July, 1862, to April, 1863	135	General Brown.
73d regiment..	10	890	From July, 1862, to Dec., 1863	141	General Brown.
74th regiment..	10	857	From July, 1862, to Nov., 1863	186	General Brown.
75th regiment..	6	357	From Sept., 1862, to Aug., 1863	35	General Schofield.
76th regiment..	10	446	From July, 1862, to April, 1863	105	General Brown.
77th regiment..	8	630	From Sept., 1862, to Mar., 1864	73	General Totten.
80th regiment..	4	265	From Sept., 1863, to Dec., 1863	90	General Schofield.
81st regiment..	3	217	From Sept., 1863, to July, 1864	90	Colonel Williams.
82d regiment..	2	159	From Oct., 1863, to April, 1864	127	Colonel Williams.
1st prov. reg't.	12	956	From Mar., 1863, to Feb., 1864	219	General Curtis.
2d prov. reg't.	14	1,136	From Mar., 1863, to Nov., 1863	204	General Curtis.
3d prov. reg't.	11	968	From April, 1863, to Nov., 1863	136	General Curtis.
4th prov. reg't.	12	1,039	From April, 1862, to June, 1864	223	General Curtis.
5th prov. reg't.	12	1,008	From May, 1863, to Dec., 1863	175	General Curtis.
6th prov. reg't.	11	1,106	From April, 1863, to Oct., 1863	217	General Curtis.
7th prov. reg't.	10	1,029	From April, 1863, to Oct., 1863	160	General Curtis.
8th prov. reg't.	11	777	From May, 1863, to Nov., 1863	172	General Curtis.
9th prov. reg't.	10	928	From May, 1863, to Dec., 1863	127	General Curtis.
10th prov. reg't.	4	266	From 9th to 19th Sept., 1863 ..	10	General Curtis.
De Kalb co. battery	3	256	From July, 1862, to April, 1863	130	General Schofield.
Buchanan co. battery	3	169	From Aug., 1862, to April, 1863	85	General Schofield.
Pike co. battery	7	516	From July, 1862, to April, 1863	37	General Merrill.
2d Howard co. battery	3	210	From Oct., 1862, to April, 1863	61	General Merrill.
Callaway company	2	161	From Dec., 1862, to April, 1863	98	General Guitar.
Warren company	1	79	From Aug., 1862, to Sept., 1862	30	General Schofield.
Jefferson company	1	78	From Aug., 1862, to Sept., 1862	20	General Davidson.
Mounted city guard	1	67	From April, 1863, to May, 1863	30	General Schofield.
Lieut. Axline's company	1	50	From Jan., 1864, to May, 1864	90	General Guitar.
Maries county	2	224	From July, 1862, to Nov., 1862	75	General Davidson.
		54, 005		7, 535	

HEADQUARTERS STATE OF MISSOURI,
Adjutant General's Office, December 11, 1864.

I certify, upon honor, that the above statement is correct, as shown by the records of my office, and that the amount of service claimed to have been rendered by each organization of enrolled Missouri militia is, to the best of my knowledge and belief, accurate and true.

JOHN B. GRAY, Adjutant General of Missouri.

EXHIBIT K.

WASHINGTON, D. C., *March 9, 1864.*

SIR: I request that the State of Missouri may be credited with the enrolled Missouri militia that have been in active service on her quota under the calls of the President of the United States for troops, and in support of that application present the following statement of facts:

In the summer of 1862 the rebel General Price was believed to be preparing to invade Missouri from Arkansas with a formidable force. The rebel Generals Coffee and Hughes actually penetrated to the Missouri river, captured Independence, defeated our forces at Lone Jack, and threatened Lexington. At the same time there sprung up in northern Missouri a rebel force of over 3,000 men under Porter, of over 1,500 men under Poindexter, and there was a large force on the south side of the river, all believed to be acting in concert with Price.

To meet these dangers the federal forces in Missouri were deemed by General Schofield, at that time in command of the department, to be entirely inadequate. He, therefore, with consent of the governor of the State, organized the militia, called them into active service, and placed them under command of such officers as he chose to designate. They proved to be an important auxiliary in defeating the rebels. They fought in different parts of the State under federal officers; they took many prisoners, believed to be not less than five thousand, who were sent south and exchanged. In all cases they acted in subordination to the federal officers, aiding in carrying out the orders of the commander in that department, and were not used as a force for the purpose of carrying out the State authority any further than it was the duty of the commander of the department to see that such authority was enforced. On the contrary, General Schofield issued an order prohibiting the enrolled militia in active service from assisting in the execution of the laws of Missouri concerning slaves.

The enrolled militia were, in fact, called out in a most pressing emergency by the commander of the department to supply deficiencies in the federal forces there, and have at all times been used for such purposes. They have been kept in service, after the present emergency passed, to enable the commander of the department to send federal troops to other points, as in the case of re-enforcements to General Grant at Vicksburg, and to General Steele in Arkansas.

The importance of the service rendered by the enrolled Missouri militia is strongly attested by General Schofield, in a communication to the President under date of October 20, 1863, a copy of which is herewith filed, marked A. He says: "The services of the enrolled militia have been of great value, not only during the summer of 1862, when they were first organized, but also during the present year."

"The ten provisional regiments which the governor organized for continuous service, and placed under my command, enabled me to relieve an equal force of United States troops, and send them to General Grant. On several occasions I have called out from one to four additional regiments for temporary service, to meet emergencies as they have arisen. With a few exceptions they have responded with promptness and alacrity, and have done good service."

To the same effect is a letter from General Curtis to Governor Gamble, herewith filed, marked B, dated January 4, 1863. General Curtis says: "The demand for troops below has induced me to send out almost everything; so there is only Merrill's regiment of United States troops remaining north of the river. This is only partially armed. We must rely, therefore, mainly on the enrolled militia."

The government at Washington has also indicated its appreciation of the enrolled Missouri militia, by directing them to be fed and clothed at the expense of the United States, as appears from the following orders:

General Orders, } HEADQUARTERS DEPARTMENT OF THE MISSOURI,
No. 4. } *St. Louis, Missouri, January 9, 1863.*

Pursuant to authority of the Secretary of War, the enrolled Missouri militia will be entitled to draw forage and subsistence, and to be furnished transportation when in actual service, upon requisition properly approved by the United States officer commanding the district in which they may be serving. But such militia will in no case be considered in actual service, except when called out by the governor of the State or a commander of a district, and only while they are retained in service by such commander.

By command of Major General Curtis:

H. Z. CURTIS,
Assistant Adjutant General.

—
HEADQUARTERS DEPARTMENT OF THE MISSOURI,
St. Louis, June 3, 1863.

The following despatch has just been received, and is respectfully forwarded for your information:

"The Secretary of War authorizes the issue of clothing, camp and garrison equipage, to militia in actual service and under your command, and to remain in actual service so long as department commander shall require them.

"H. W. HALLECK,
"General-in-Chief."

I am, governor, very respectfully, your obedient servant,

J. M. SCHOFIELD,
Major General.

Governor H. R. GAMBLE, *St. Louis, Missouri.*

It is impossible, in this communication, to refer to all the orders under which the militia have been put on duty. A few of the most important only will be mentioned. The letter of General Schofield to the President, already quoted, shows that he retained in the service, for a considerable period, ten regiments, and that he called out from one to four regiments to meet emergencies.

On the 23d of April, 1863, General Curtis, in a note addressed to Governor Gamble, herewith filed, marked C, asked for nine regiments, which were furnished.

On the 9th of September, 1863, General E. B. Brown, commanding the central district of Missouri, asked for four companies of the militia, which were furnished. This application is herewith filed, marked D.

In August, 1862, I know that Hon. B. F. Loan, at that time a brigadier general in the pay of the United States, ordered five hundred enrolled militia from St. Joseph, Missouri, to assist in a campaign against the rebel Colonel Poin Dexter. The campaign was undertaken by order of General Schofield. The enrolled militia assisted General Loan most materially, and were afterwards marched by him to the relief of the town of Lexington, which was considered in danger from the rebel Coffee and his men. In September, 1862, General Loan requested and obtained 1,200 militia from northern Missouri to go to Jackson county and co-operate with the United States troops there in efforts to expel Quantrill and his band.

The whole number of militia called into service from time to time, up to the 31st of December, 1863, is 52,165, and their terms of service were from twenty days to nine months. Their duties, I repeat, were precisely those of the United States soldiers in Missouri. In all cases they took the place and answered the purpose of federal troops. In many cases they relieved federal troops, and in some cases they were engaged in actual battle. They especially distinguished themselves at Springfield in January, 1863, and received the warmest commendation of

General Brown, then in command in southwest Missouri. And they contributed to the capture of Vicksburg and the great victories in that quarter, by enabling timely re-enforcements to be sent to General Grant from Missouri.

The State of Missouri has expended upwards of four millions of dollars in the payment of her militia thus employed, and is still in arrears with them some two millions of dollars. This is a drain on the resources of the State that she is poorly able to bear. Appreciating this fact, I endeavored, while acting governor in August last, to reduce the militia force in service, and accordingly issued an order directing the eight provisional regiments to be mustered out of service. This led to a correspondence between General Schofield, General Fisk, and the State authorities, and finally, on General Schofield's application, the order was rescinded. This last correspondence is herewith filed, marked E. After the revision of the order, I waited on General Schofield and urged upon him the necessity of relieving the militia. He promised to relieve them as soon as he could, but when he left the department there were 3,000 enrolled militia on duty.

On the 2d of February last I addressed a letter, a copy of which is herewith filed, marked F, requesting General Rosecrans to relieve the militia. He replied that he could not do it now, but would do it as soon as the condition of his department would permit, and there are still over 2,500 enrolled militia in active service.

It should be borne in mind that the enrolled Missouri militia were under command of General Schofield while he remained in Missouri. They were organized under his orders, as will appear from a copy of Order No. 19, series of 1862, herewith filed, marked G. On his return to Missouri in May, 1863, he was again placed in command by the following order:

General Orders, } HEADQUARTERS STATE OF MISSOURI,
No. 17. } *Adjutant General's Office, St. Louis, May 20, 1863.*

The command of the enrolled militia now in actual service within the State, including the provisional regiments, is conferred upon Major General John M. Schofield, commanding the department of the Missouri.

By order of the commander-in-chief:

ALEXANDER LOWRY,
Captain and Acting Assistant Adjutant General.

General Rosecrans has the same command over the enrolled militia that was possessed by General Schofield. And though, owing to some misunderstanding between Governor Gamble and General Curtis, the latter did not during all his stay in Missouri have that command, it is believed the militia rendered him every assistance he required, except in the case of furnishing guards to the provost marshals, which they were prohibited doing by orders of Governor Gamble, except as directed from his headquarters. But even that order was in force only during a portion of the time General Curtis had command in Missouri, it not having been issued until February or March, 1863.

Under these circumstances, I feel authorized to request the Secretary of War to order the Provost Marshal General of the United States to ascertain the number of enrolled Missouri militia that have been in actual service, and the time they have been in service; to estimate what number of three-years men such militia are equal to, and to credit the State of Missouri upon the quota assigned to her under the calls of the President for troops with such a number of three-years men as may be found equivalent to such enrolled militia.

Very respectfully,

WILLARD P. HALL,
Governor of Missouri.

Hon. EDWIN M. STANTON,
Secretary of War.

HEADQUARTERS DEPARTMENT OF THE MISSOURI,
St. Louis, Missouri, October 20, 1863.

Mr. PRESIDENT: In compliance with so much of your instructions, dated October 1, as directs me to report my opinion upon the availability for good of the enrolled militia of Missouri. I have the honor to submit the following:

The services of the enrolled militia have been of great value, not only during the summer of 1862, when they were first organized, but also during the present year.

The "ten provisional regiments," which the governor organized for continuous service, and placed under my command, enabled me to relieve an equal force of United States troops, and send them to General Grant. On several occasions I have called out from one to four additional regiments for temporary service, to meet emergencies as they have arisen. With a few exceptions, they have responded with promptness and alacrity, and have done good service.

As an example illustrating the value of this organization, on the 18th instant I called out the 7th regiment of St. Louis to relieve troops in the city, which I wished to send after Shelby. Within six hours after the order was made the whole city was under the guard of this regiment and a few colored recruits, and the old troops were on their way to Jefferson City. The regiment was just as valuable to me, during the short time that its services were required, as a regiment of regular troops would have been.

There are some points of objection to the enrolled militia organization, arising from defects in the State laws. Militiamen are exempted from active service for one year, upon payment of the small sum of thirty dollars. The consequence of this is, that, as a rule, only the most worthless class of men are found in its ranks. The company officers are elected by the men, and share their social and political prejudices, in addition to being generally incompetent, and in some instances disloyal, or, at best, of doubted loyalty.

To remedy these defects the "provisional regiments" were formed by details of both officers and men from all the regiments, eighty in number, of the enrolled militia.

In this manner ten regiments were formed for continuous active service, of as good material as could be expected in a militia organization. They are troops of about an average quality, varying, however, greatly—some being very good, and others very bad. From their intimate knowledge of the country and people they have been able to render quite as valuable service, in most cases, as United States troops could have done. In some cases they have been a positive injury, in consequence of their participation in the unfortunate partisan feeling which has sprung up in the State. This fact is the most serious objection to retaining them in service. There are also other objections, which I will enumerate.

This detail, by which the active regiments are formed, is an arbitrary conscription, at least in many cases, and hence is more odious to the men than a regular draft. While these troops are supplied by the United States with quartermasters, commissary and ordnance stores, they must look to the State for pay. The resources of the State, available for this purpose, are now nearly exhausted; and hence, if these troops serve much longer, they must do so without pay, or at least wait for it till some uncertain future time. Aside from the injustice of keeping troops in service without pay, it will be impossible to preserve among them the discipline and good feeling necessary to their efficiency for any considerable time after their pay is stopped.

For these reasons I have proposed to myself to gradually dispense with the services of these troops, as fast as their places can be virtually supplied by new troops raised in Missouri for the general service, by volunteering or draft, and as fast as my success in Arkansas, and consequent increased security to Missouri, shall diminish the force necessary to be kept in service here. I have

every reason to hope that, in two or three months from this time, these ten regiments can all be discharged, while, so far from having to recall troops from the main armies to take their place, additional re-enforcements can be sent from Missouri to those armies.

My original design, in organizing the militia of Missouri, was to prepare the entire military force of the State so that it could be quickly called into active service in any emergency—such, for example, as a raid from Arkansas—thus diminishing greatly the United States force necessary to be kept in Missouri.

I still propose to carry out this plan, preserving and perfecting the organization of the militia regiments, so that they will be available whenever they may be required.

For the reasons I have stated, I would not recommend that these troops be kept in continuous service longer than necessary to prevent an actual withdrawal of troops from more important service.

But I would not, for any reasons which now exist, or which I can now foresee, recommend that they be discharged until they can be spared without any diminution of the main armies.

I have the honor to be, very respectfully, your obedient servant,
J. M. SCHOFIELD,
Major General.

The PRESIDENT,
Washington, D. C.

HEADQUARTERS DEPARTMENT OF THE MISSOURI,
St. Louis, April 23, 1863.

I desire to strengthen my forces on the southwestern branch railroad, and also on the Iron Mountain road.

A formidable rebel force has entered southeast Missouri, which must be immediately repelled.

I desire you to call out three or four regiments of enrolled militia on each of the three roads for thirty days' service, and that three regiments may be added to the strength of this city.

I have the honor to be, governor, your obedient servant,
S. R. CURTIS,
Major General.

His Excellency Governor H. R. GAMBLE.

St. Louis, April 23, 1863.

The adjutant general will order General McCormick to call out three regiments for active service—say 32d, 64th, and 68th. He will order Brigadier General Crawford to call out three regiments for active service, to be embodied at suitable points. He will order Brigadier General Edwards to call into service three regiments of his command. All for thirty days.

H. R. GAMBLE.

HEADQUARTERS DISTRICT OF CENTRAL MISSOURI,
Jefferson City, Missouri, September 6, 1863.

GENERAL: I have the honor to report that the guerillas from Quantrill's band have been driven into this district in considerable numbers, and also that returning soldiers from Price's and Marmaduke's forces have increased rapidly in a few days. In order to be fully protected and enabled to keep the country

thoroughly scouted, I have requested Brigadier General T. L. Crawford, E. Missouri militia, to call into active service one company at the post, and three companies at California, of the E. Missouri militia, and also that the commanding officer at Linn Creek be instructed to increase his command from the same source, should he find it necessary.

I am, very truly, your obedient servant,

E. B. BROWN,
Brigadier General, Commanding.

Major General J. M. SCHOFIELD,
Commanding Department of Missouri.

HEADQUARTERS DISTRICT SOUTHEAST MISSOURI,
Pilot Knob, September 4, 1863.

GENERAL: I have the honor to state that the 8th provisional regiment, E. Missouri militia, has, in part, been well armed, clothed and subsisted, and that several companies of the regiment have been quite useful in the district as guards for enrolling officers, and in outpost duty. I never saw *better men*. Many of the officers are of no account whatever. The regiment could be put in good shape, but I understand a portion of it has already been mustered out without my knowledge. I cannot possibly relieve the entire regiment until I have other troops sent into the district, without abandoning two of my outposts.

I am, general, very respectfully, your obedient servant.

CLINTON B. FISK,
Brigadier General.

Major General J. M. SCHOFIELD,
Commanding Department.

HEADQUARTERS STATE OF MISSOURI,
OFFICE OF COMMANDER-IN-CHIEF,
St. Louis, February 2, 1864.

GENERAL: I enclose herewith a commission for you as major general of the "Missouri State militia," and also an order assigning you to the command of all the militia of the State, whether in active service or not. This is done in order that you may have the exclusive management of all military matters in Missouri.

I am informed by the adjutant general of the State that some three thousand enrolled Missouri militia are now in active service, divided as follows: Fifteen hundred are in southwest Missouri, and the rest are under command of General Guitar. These men, you are aware, are not paid by the United States, but by the State of Missouri.

This State is now in arrears with her militia nearly or quite two millions of dollars, and there is no present prospect of her being able to pay the militia in service at all.

Under these circumstances, I beg to suggest the propriety of relieving from duty the enrolled militia as soon as it is prudent to do so. If, however, their services should be required for any considerable period, cannot they be mustered into the United States service for such period—say three, six, or nine months?

Very respectfully, your obedient servant,

WILLARD P. HALL,
Governor of Missouri and Commander-in-Chief.

Major General W. S. ROSECRANS,
Commanding the Department of the Missouri.

HEADQUARTERS DISTRICT OF SOUTHWEST MISSOURI,
Springfield, December 2, 1863.

GENERAL: I would respectfully call the attention of the proper authorities to the condition of the troops of the enrolled militia now in active service in my district, viz., the 6th and 7th provisional regiments.

These troops have not been paid for nine months. This long delay in making payment tends to produce, and has produced, a feeling of discontent and dissatisfaction on the part of the troops which, to some extent, impairs their efficiency. The arms of many companies of these troops are of a most unserviceable and inferior character, and should be exchanged for a superior arm at once. The services of these troops are imperatively demanded in this section of the country, and, in all probability, will be for some time to come, unless their place is supplied by other troops. In any event, common justice and honor demand that they should be paid, and armed without delay. Well armed and paid, I believe them to be quite as serviceable in the character of warfare now waged here as any troops the government can employ.

Believing this matter should receive the early attention of the proper authorities,

I remain, very respectfully, your obedient servant,

JOHN B. SANBORN,
Brigadier General, Commanding.

Major General SCHOFIELD,
Commanding Department of the Missouri.

Official copy.

MELVILLE SAWYER,
Deputy Paymaster General of Missouri.

IRONTON, MISSOURI, *August 28, 1863.*

GENERAL: Please inform me if Major General Schofield is aware of the order to disband the 8th provisional regiment enrolled Missouri militia.

Under existing orders from headquarters, State of Missouri, the entire State force was placed under the command of Major General Schofield. In compliance with that order I turned over to General Davidson the command of the 8th provisional regiment, and that officer was relieved from active duty. You, as the successor of General Davidson, in assuming command of the district, took jurisdiction of the 8th provisional regiment, and it does seem to me an assumption on my part to disband any part of your command. I will write to Adjutant General John B. Gray to-day, and inform myself upon the subject.

I am, general, very respectfully, your obedient servant,

JAMES R. McCORMICK,
Brigadier General, 3d District E. M. M.

Brigadier General CLINTON B. FISK,
Commanding Military District, Southeast Missouri.

EXHIBIT L.

Extract from message of Governor Willard P. Hall to the general assembly of the State of Missouri.

EXECUTIVE MANSION,
Jefferson City, December 26, 1864.

Up to the first of July last Missouri had furnished, by volunteer enlistments, ten thousand more soldiers for the federal army than her quota. Since that

time eleven new regiments have been recruited and organized. Three of our districts have filled their quotas under the last call of the President with volunteers. Three other districts are but a few hundred men in arrear, and the deficiency in the other districts is believed to arise, to a considerable extent, from an excessive enrolment.

The whole number of men furnished by Missouri under different calls of the President prior to February 1, 1864, is	59, 676
Number of men furnished since February 1, 1864, as shown by the reports of the commissary of musters, department of the Missouri, and assistant acting provost marshal general for Missouri	18, 508
Veteran musters to April 28, 1864	1, 409
The enrolled Missouri militia that have served six months and longer, reduced to three years standard, by report of adjutant general of Missouri of April 18, 1864	2, 174
Total number furnished to 30th November, 1864	81, 767

In addition to this, we have had in the field, since the 31st of July, 1861, more than sixty thousand militia, and have actually expended in their payment upwards of four millions of dollars. These gratifying results, it is claimed, are due in part to the fidelity and industry of the provisional government.

In September last General Sterling Price, with a rebel force estimated at from 12,000 to 14,000 mounted men, invaded this State. He entered in the southeast, and his forces passed through the counties of Butler, Wayne, Madison, Iron, St. Francois, Washington, Franklin, Gasconade, Osage, Cole, Moniteau, Cooper, Howard, Pettis, Saline, Lafayette, and Jackson, plundering our people. He threatened Jefferson City, seized Boonville, Glasgow, Lexington, Independence, and many other less important places, and recruited his strength with nearly ten thousand men and boys, residents of Missouri.

He left the State at or near Westport, passed into Kansas, and thence retreated through Kansas and southwest Missouri into Arkansas. He was very gallantly resisted by General Ewing and a few hundred soldiers at Pilot Knob; our forces were, however, compelled to give way before superior numbers and retreated to Rolla.

General Brown, by his prompt concentration of troops at this point, and Generals Fisk, McNeil, and Sanborn, by their prompt re-enforcements, saved the capital of the State from capture.

General Pleasanton, with some six or eight thousand cavalry, overtook Price's rear in Jackson county, and pressed him hotly as far as Fort Scott, capturing most of his artillery, and killing, wounding, and making prisoners a large number of his officers and men. General Pleasanton, by his vigor and skill, drove Price from the State, and saved Kansas from great loss. His brigade commanders, McNeil, Sanborn, Phillips, and Benteen, acquitted themselves with credit. The last three are especially commended by their division commander. I feel it my duty to call your attention to Phillips and Benteen particularly. They are both young officers, and both Missourians; one is colonel of the 7th, the other is lieutenant colonel of the 10th Missouri cavalry volunteers. As a testimonial of my appreciation of their services, I have made them both brigadier generals of the enrolled militia, and I trust the President of the United States will think proper to make them brigadier generals of volunteers—an honor they merit for gallant and important services on the battle-field.

Major General A. J. Smith, with his infantry, made every effort to overtake the enemy. Though he failed in this, it cannot be doubted that his rapid marches and proximity to the scene of action, by inspiring our cavalry and dispiriting the enemy, contributed much to our success.

The troops under General Curtis co-operated with those under General Rosecrans, and by their joint efforts the raid of Price was turned from a rebel triumph to a rebel disaster.

As soon as Price's invasion became a certainty, I authorized the various district commanders to call into service such portions of the militia of the State as, in their opinion, the emergency demanded. A large number of the militia were so called into the service; a portion of them fought at Pilot Knob, others participated in the defence of the city, others fought and were captured at Glasgow with Colonel Harding; others fought under General Blunt in resisting the enemy's march from Lexington to the western border, and generally they acquitted themselves well. It was the enrolled militia who killed the outlaw Bill Anderson, who for months had been the scourge of northern Missouri, and who had defied or evaded all troops that had been previously sent against him. Under orders from Brigadier General Craig, of the militia, Lieutenant Colonel Cox and Major Grimes, both militia officers, with a militia force attacked Anderson and his band at Albany, in Ray county, killed him and dispersed his followers. For their good conduct in this affair Lieutenant Colonel Cox, Major Grimes and their officers and men, have received the thanks of the commander of the department in orders from headquarters; and, in my opinion, they deserve the thanks of the general assembly also, for, beyond all question, Bill Anderson was the most dangerous, the most wicked, and the most mischievous man who has ever afflicted Missouri.

When the militia were called out to meet Price, I promised both officers and men that they should be paid for their services, and paymasters are now engaged in performing that duty.

The payment of the militia will engage your attention. Up to the first of January last there were due the militia \$989,579 05. The rolls for the current year are not all returned to headquarters, and the precise sum due the militia for services in 1864 cannot therefore be stated. It is believed, however, that one million of dollars will be found not far from the amount, and I would recommend an issue of one million of dollars of Union military bonds to pay the militia. That amount, together with the defence warrants that may be issued under existing laws, will enable the State to pay off the militia in full. The whole amount of Union military bonds now outstanding is less than two million of dollars. The issue recommended would not make the whole amount outstanding as large by some hundreds of thousands as the original issue, which was three millions.

The amount paid the militia by the State, and the amount still due the militia, constitute a valid claim against the United States, which Congress ought to discharge. In support of that position, the following facts may be adduced:

In the summer of 1862 the rebel General Price was believed to be threatening to invade Missouri from Arkansas with a formidable force. The rebel Generals Coffee and Hughes actually penetrated to the Missouri river, captured Independence, defeated our forces at Lone Jack, and threatened Lexington. At the same time there sprang up in northern Missouri a rebel force of over three thousand men under Porter, of over fifteen hundred men under Poindexter, and there was a large force on the south side of the river, all acting in concert. To meet these dangers the federal forces in Missouri were deemed by General Schofield, at that time in command of the department, to be inadequate. He therefore, with the consent of Governor Gamble, organized the militia, called them into active service, and placed them under command of such officers as he chose to designate. They proved to be an important auxiliary in defeating the rebels. They fought in different parts of the State under federal officers, and they took many prisoners, believed to be not less than five thousand, who were sent south and exchanged. In all cases they acted in subordination to the federal officers, aiding in carrying out the orders of the commander of the department, and were not used as

a force to enforce the State authority any further than it was the duty of the commander of the department to see that such authority was enforced; on the contrary, General Schofield issued an order prohibiting the enrolled militia, in service, from assisting in executing the laws of Missouri concerning slaves.

The enrolled militia were first called out, in a most pressing emergency, by the commander of the department, to supply deficiencies in the federal forces. They have been kept in service after the emergency passed, to enable the commander of the department to send federal troops to other points, as in the case of re-enforcements to General Grant at Vicksburg, and to General Steele in Arkansas.

The importance of the services rendered by the enrolled militia is strongly attested by General Schofield in a communication to the President, under date of October 20, 1863. He says: "The services of the enrolled militia have been of great value, not only during the summer of 1862, when they were first organized, but also during the present year. The ten provisional regiments which the governor organized for continuous service, and placed under my command, enabled me to relieve an equal force of United States troops and send them to General Grant. On several occasions I have called out from one to four additional regiments for temporary service, to meet emergencies as they have arisen. With a few exceptions they have responded with promptness and alacrity, and have done good service."

To the same effect is a letter from General Curtis to Governor Gamble, dated January 4, 1863. General Curtis says: "The demand for troops below has induced me to send out almost everything, so there is only Merrill's regiment of United States troops remaining north of the river. This is only partially armed. We must rely, therefore, mainly on the enrolled militia."

From this statement it will be perceived that the duties of the enrolled militia have been precisely those of the United States soldiers in Missouri. In all cases they took the place and answered the purpose of federal troops. In many cases they relieved federal troops, and in some cases they were engaged in actual battle. They especially distinguished themselves at Springfield, in January, 1863, and received the warmest commendation of General Brown, then in command in southwest Missouri.

They contributed to the capture of Vicksburg and the great victories in that quarter, by enabling timely re-enforcements to be sent to General Grant from Missouri, and they materially assisted General Rosecrans to repel the late rebel invasion of this State.

It should be borne in mind that the enrolled militia were under the command of General Schofield while he remained in Missouri. General Rosecrans had the same command over them that General Schofield had, and though, owing to some misunderstanding between Governor Gamble and General Curtis, the latter did not, during all of his stay in Missouri, have that command, it is believed the militia rendered him every assistance he required, except in the single case of furnishing guards for provost marshals.

The payment of the large militia force which has been kept in service in this State at the instance of United States officers, and under their command, is a drain upon our resources that we are but poorly able to bear. Appreciating this fact, I endeavored, while acting governor, in August, 1863, to reduce the militia force in service, and accordingly issued an order relieving the 8th provisional regiment from duty. This led to a correspondence between General Schofield, General Fisk, and the State authorities, and finally, on General Schofield's application, the order was rescinded. After the rescission of the order I called on General Schofield, and urged upon him the necessity of relieving the militia from active service. He promised to relieve them as soon as he could, but when he left the department there were three thousand militia on duty.

On the 2d of February last I addressed a letter to General Rosecrans re-

questing him to relieve the militia. He replied that he could not then, but that he would do so as soon as the condition of the department would permit. A large number of the militia are still on duty.

The President of the United States and the Secretary of War have done all in their power to place the enrolled militia on the same footing with federal soldiers. By an order from the War Department the militia are fed and clothed at the expense of the United States, and all militia that have served continuously for six months or more have been credited us on our quota of troops due under the calls of the President.

An effort was made at the last session of Congress to procure the passage of a bill refunding to Missouri the amount expended by her in paying the militia. That bill failed. It is now respectfully suggested that such action should be taken by the general assembly as will bring the subject again before the Congress of the United States.

* * * * *

WILLARD P. HALL.

EXHIBIT M.

*Extract from the report of the auditors of the State of Missouri, rendered
January 1, 1865.*

TREASURY DEPARTMENT,
Missouri, Jefferson City.

* * * * *

The Missouri convention, at its October session, 1861, passed an ordinance appropriating one million of dollars in defence warrants, redeemable and payable into the State treasury for taxes, to enable her authorities to protect the State by organizing and putting into service the loyal militia. These warrants, to the amount of one million three hundred and seventy thousand four hundred and eighty dollars, have been paid out in the State for the organization, support, and maintenance of our State militia. The general assembly at its last session, by an act to provide means for the payment and support of the enrolled militia, approved March 9, 1863, appropriated the sum of three millions of dollars, and authorized the issue of three million of Union military bonds for that purpose. The sum of three million of these bonds have been issued, and delivered to the paymasters of the State, and by them paid out to the enrolled militia, making a military debt of the State of four million three hundred and seventy thousand four hundred and eighty dollars. Defence warrants were made receivable for *all taxes* due the State; Union military bonds were made receivable for 50 per cent. of State revenue, and for all military and commutation tax, provided for under said act of March, 1863, up to and including the year 1864.

There has been paid into the treasury and cancelled and destroyed, up to the 1st of December, 1864, defence warrants amounting to the sum of one million one hundred and thirteen thousand three hundred and sixty-five dollars. There has been redeemed and paid into the treasury for taxes, &c., up to the first day of December, 1864, Union military bonds amounting to the sum of one million two hundred and twenty-eight thousand nine hundred and seventy dollars, and interest allowed thereon, amounting to three thousand four hundred and seventy dollars and seven cents.

The following table will show at a glance the amount of defence warrants and Union military bonds issued under the ordinance and act referred to, the amount redeemed and cancelled, and the amount outstanding at the dates referred to :

Amount of defence warrants issued to December 1, 1864	\$1, 374, 480 00
Amount counted and destroyed in the same time . . .	\$1, 113, 365
Amount of defence warrants returned by pay- masters and quartermasters, as provided by the ordinance and cancelled and filed in auditor's office	16, 836
	<hr/> 1, 130, 201 00
Amount of defence warrants outstanding December 1, 1864 . . .	244, 279 00
Amount of Union military bonds issued	3, 000, 000 00
Amount counted and destroyed by the committee, as provided by a joint resolution of the last general assembly, to Decem- ber 1, 1864	1, 228, 970 00
	<hr/> 1, 771, 030 00
Amount of Union military bonds outstanding December 1, 1864	1, 771, 030 00
Amount of interest paid on Union military bonds to December 1, 1864	3, 470 07
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I would recommend that Union military bonds be still received for 50 per cent. of State taxes for the years 1865 and 1866, and by that time they will be all redeemed.

Before closing my report, I desire to call the attention of the general assembly to two important subjects which demand a favorable consideration at your hands. One is an appropriation for the support of the orphan children of our deceased soldiers who have fallen in defence of our common country. The citizens of St. Louis have moved in the matter, and, through the generous and prompt action of the Mississippi Valley sanitary fair, have donated the Webster College, together with twenty acres of ground attached, for the reception of these children thrown upon our country by this unholy rebellion. An appropriation annually by your body would afford the means and support to a large number of our growing youth left desolate by the ravages of war; it would be a proud monument to the patriotism of our noble State.

There is also a large number of our citizen soldiery who have been engaged in active service, who have never been paid, and it is incumbent upon your body to provide means for their payment. Many of them and their families are now suffering for the most of the common necessities of life, produced by the non-payment of their past dues by the State. I am still of opinion that the general government should reimburse the State for this service, and it is to be hoped that the present Congress will provide the ways and means to liquidate the debt.

* * * * *

Very respectfully,

WILLIAM S. MOSELEY,
Auditor of Public Accounts.

IN THE SENATE OF THE UNITED STATES.

JANUARY 18, 1865.—Submitted and ordered to be printed.

Mr. CLARK made the following

REPORT.

[To accompany joint resolution H. R. No. 80.]

The Committee on Claims, to whom were referred joint resolution (H. R. No. 80) for the relief of J. & O. P. Cobb, of Indiana, and accompanying papers, respectfully report:

That from the evidence in the case it appears that the firm of J. & O. P. Cobb, of Aurora, Indiana, on the fifth (5th) day of May, 1863, entered into a contract with the government of the United States, through E. D. Chapman, Captain, A. Q. M., at St. Louis, Missouri, for the purchase of five thousand (5,000) tons of hay to be delivered at Memphis, Tennessee, and paid for at the rate of \$28 49 per ton.

That in fulfilment of this contract said firm had, on the 11th and 12th days of July, 1863, loaded on barges and flatboats, at the town of Vevay, Indiana, and on the Ohio river, for Memphis, Tennessee, 644,360 pounds of hay, which, at the contract price, \$28 49 per ton, when delivered, would amount to \$9,178 90.

It further appears that at about the 11th of July, 1863, the rebel Morgan was making a raid into Indiana, and that to prevent Morgan from re-crossing the river, General Boyle, who was then in command of the district of Kentucky, issued an order to the commander of a gunboat "to proceed up the Ohio river as far as Madison, Indiana, and to seize all the water-craft on the river and sink or burn them."

That in the execution of this order, and while the barges and flatboats were so loaded with hay for delivery to the government, the commander of the gunboat set fire to the hay, and totally destroyed it and the boats on which it was loaded.

The committee are of opinion, from this statement of facts, that the government, intervening and preventing the entire fulfilment of the contract by the destruction of the hay before it was landed at Memphis, may be considered to have waived that part of the contract when the officer of the gunboat took control of the barges and flat-boats, and, therefore, should pay for it, deducting a reasonable sum for the difference of transportation, which it is admitted in the evidence should be four dollars per ton, amounting to \$1,288 72, leaving the sum of \$7,890 18.

The petitioners, Cobb & Co., also claim pay for the boats and barges on which said hay was loaded, and which were destroyed at the same time with the hay by said gunboat, and in pursuance of said military order. They allege and offer testimony tending to show that said barges and boats were their property, and, together with some lumber and other articles on board of said boats, and destroyed at the same time with the hay, were of the value of \$5,441 16. As,

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RATES.

House joint resolution
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23d January, 1863,
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however, the Senate has not yet passed upon any like claims for property destroyed by the military forces, and as no testimony has been taken on the part of the government tending to fix the precise value of said boats and barges, and other property, except the hay, they report an amendment of joint resolution H. R. No. 80, so as to pay for the hay without paying for the other property at the present time.

IN THE SENATE OF THE UNITED STATES.

JANUARY 23, 1865.—Ordered to be printed.

Mr. DAVIS made the following

REPORT.

[To accompany joint resolution H. R. 102.]

The Committee on Claims, to whom was referred the House joint resolution No. 102, for the relief of Captain M. M. Hawes, assistant quartermaster, report:

That the said Hawes filed his petition in general terms, 23d January, 1863, in which he sets forth no facts, but refers to accompanying affidavits for them.

The affidavit is dated 7th January, 1863, and, except its heading, is, including the signature, apparently in the handwriting of the petitioner. It states that the petitioner, "being duly sworn according to law, does say, that an iron safe in my possession, containing papers and treasury *bills* belonging to the United States, was stolen from my tent, broken open and rifled of its contents, during the night of November 4, 1862, while encamped near Sharpsburg, Maryland. That I *counted the bills* and examined the papers the same day; and that the amount of bills belonging to the United States, contained in the safe and stolen, was one thousand six hundred and ninety-eight dollars and twenty-seven cents, (\$1,698 27,) being the amount as 'on hand per my summary of October, 1862;' that a 'receipt roll' signed by men employed and paid by me was among the papers stolen; that I have used every endeavor in my power to discover the robber and recover the loss, but without success."

Robert Rutherford, a clerk in the Quartermaster General's office, in a communication dated Washington city, April 8, 1864, in reply to a letter of March 22, 1864, from George D. Kellogg, clerk to the Committee on Military Affairs of the House of Representatives, in relation to claim of Captain M. M. Hawes for relief for certain public funds alleged to have been stolen, and requesting information as to the state of his accounts respecting the moneys so claimed to have been lost, and, if any of the stolen money was recovered, how much, and to whom it was credited, says: "I have the honor to inform you that on examination of the accounts of Captain Hawes, on file in this office, it appears that he claims a credit on his account current for November, 1862, for \$1,698 27, as money stolen from him November 4, 1862. No other explanation of the loss is given, and it does not appear that any portion of this fund has been accounted for by him to this office as returned."

Brigadier General George H. Gordon's sworn statement is in the case. He states that the petitioner was an officer of his staff for about eighteen months, including the time when the robbery was said to have been committed, and heard of it at the time; indorses the good character and proper official conduct of the petitioner generally; and says further, that "Captain Hawes alleges that the safe was taken from his tent while he was asleep; that it contained *in bills*

one thousand six hundred and ninety-eight dollars and twenty-seven cents; that it contained many vouchers for public payments." This statement bears date 29th December, 1862.

A statement of H. B. Scott, a captain and assistant adjutant general in the United States service, dated November 9, 1863, is in the papers. It says "That about the last of December, 1862, as nearly as I can remember, Dennis Jackson, a colored teamster in the brigade train of the brigade (Gordon's) of which I was then assistant adjutant general, was discovered by me to have stolen a safe, containing government money, from Captain M. M. Hawes, A. Q. M., some months before; that charges were preferred by me against the said Dennis Jackson, which were tried by a general court-martial about the last of February, 1862," &c.

Captain Scott's testimony before the court-martial against Dennis Jackson, on his trial for stealing this money, as certified from the Judge Advocate General's office, is on file among the papers, and is as follows: "I found money in the possession of the prisoner to the amount of sixty-five dollars (\$65) in bills, which he at first claimed to have been paid to him as wages, but afterwards confessed he had stolen it from Captain Hawes. This was about the same time as the written confession was made to me. It was obtained in this way. I told him if he did not tell me the whole truth about the safe I would punish him severely. If he told the truth, I would use my influence with the court to lessen the punishment. I did not expect any such confession as I got. I expected only to get a clue by which I could find the true offender. There were also two hundred and thirty-two dollars (\$232) which the prisoner claimed was stolen from him by one Lewis Lowry, and which sum the prisoner afterwards confessed was stolen from Captain Hawes. *This also was in bills.*"

"After the prisoner made the confession, (marked A,) he told me where the rest of the money was. I immediately went down with him; went to the man to whom he had given it to take care of, and after search about half an hour, we found it in a field, in an old cartridge-box. There were sixteen dollars and a quarter (\$16 25) in silver, very much tarnished, twenty dollars (\$20) in gold, and three hundred and twenty-five (\$325) in bills. I know much the larger proportion of the contents of the safe were in bills."

"The statement of the man Jackson was in these words: 'Jack Denmark, Captain Hawes's servant, and I, stole Captain Hawes's money. Jack came to me about sundown, when he watered his horses, and told me he wanted me to come over to Captain Hawes's tent that evening; didn't tell me what for; told me he would meet me at the fence, and to whistle when near the fence; I said I would; did not know what we were going for. Soon after dark left the wagon-yard, went to the fence and whistled. Jack came and said, 'The Captain is not in. I am going to bring the safe out here, and you must break it open, and we'll get some money out of it.' Says I, 'Jack, an't you afraid?' He said 'No, there an't no danger at all.' Says I, 'Lord, Jack, I can't get it open.' Says he, 'Yes you can; take a big rock and throw it down on it and break it open. After you break it open, take out all the papers by themselves and burn them, and keep the money until you see me;' but I did not burn the papers. Then he went in and brought the safe out, handed the safe over the fence to me, and said, 'Now I am going back to the tent; the captain may come in.' Says I, 'You just go in.' Then I took the safe near the well, picked up a rock that was lying near by, and broke the safe open. The rock would weigh about twenty-five pounds. I dashed it against the safe four or five times; it made some noise; a right smart of noise. When it was broken open, I took out the papers, bills, and coin, wrapped them in a piece of old rag, and hid them under a rock between the well and the wagon camp, and went to bed. It was not 9 o'clock when I got to camp. Jack came over the next morning to the camp and told me to keep it until he seed me. Some three or four days afterwards

he told me he wanted to look at it, and wanted me to go and show him where it was. So we went and got it out, and went up in a field, back of an old burnt house. I then gave it to him, and he looked at it, took out what he wanted, and gave me the rest. He asked me if I had any place to keep it. I told him none but my knapsack. He then advised me to keep it close, and not to let no one see me with it. He did not take half the gold and silver; not more than two or three pieces of gold and one or two of silver, and told me I might keep the rest. I am sure of this; I saw him take it. He said he would take the bills, and I might have the greater part of the gold and silver. Then we went away. Jack never again mentioned the subject to me."

This summary presents all the material proof and features of the case, and upon them these observations may be made.

To allow the petitioner a credit for the money which he avers was stolen from him would establish the principle that the United States would become the voluntary insurer of all their disbursing officers against the theft or robbery of the public funds intrusted to them. In ordinary times, when these disbursing officers are few, and the sums passing through their hands comparatively small, it would be a very unsafe principle; but now, when those officers are thousands, and the money they are charged to disburse is hundreds of millions annually, it could not be allowed without producing a vast amount of fraud, perjury, and plundering of the public treasury, against which it would be impossible to guard.

But conceding this principle of indemnity in proper cases, yet where an officer, intrusted with the public money, has it taken from him by robbery or theft, should he not be required to show, reasonably, by disinterested testimony; first, that he not only lost money in the one mode or the other, but also the amount; and second, without any negligence on his part?

In this case all the evidence shows that the petitioner kept the public funds in a small safe, portable by one man, loosely under his bed, in his tent, and of so frail a character that it could be broken open by a few blows with a rock. Ought not those funds to have been kept in a stronger and less accessible safe? Or if in such a one as he used, ought it to have been insecurely placed under his bed, liable to be picked up by any camp depredator, borne away, and opened in a few minutes by a few blows with a rock? Would not a reasonably careful man have had it attached with a chain and lock to his camp bedstead, cot, or table, or some other cumbersome article which one could not easily have borne off with it? The petitioner did not keep the funds intrusted to him with reasonable regard to their security. But, besides the question of due care, and conceding the fact of the theft or robbery of the safe with public funds in it, the question arises, how much? It is not contended that this point ought to be made out with the precision and according to the strict rules of evidence required in judicial proceedings; but surely the facts of the case ought to establish with reasonable certainty the proximate amount. And, further, that if the statement of the petitioner is to have any weight in fixing the amount, it ought to appear to be frank and truthful beyond fair question. Let us examine this case on these two points.

The account which the petitioner gave of the lost money appears in three papers filed in the case: 1st, his own affidavit accompanying his petition, and dated January 7, 1863; 2d, the sworn statement of General Gordon, dated December 27, 1862; 3d, the certificate of Captain H. B. Scott, dated November 9, 1863. They afford the only proof in the case of the amount and kind of money that was in the safe when it was stolen; and they all agree that the petitioner said the money stolen was one thousand six hundred and ninety-eight dollars twenty-seven cents, in *treasury bills*; and the other contents of the safe to have been receipts executed to the petitioner as quartermaster. The statement on this point is in such terms as to exclude all inference that there was

any more or other kind of money in the safe. The petitioner's affidavit says: "That an iron safe in my possession, containing papers, and treasury bills belonging to the United States, was stolen from my tent, broken open, and rifled of its contents during the night of November 4, 1862, while encamped near Sharpsburg, Maryland; that I counted the *bills* and examined the papers the *same day*, and that the amount of *bills* belonging to the United States, contained in the safe and stolen, was *one thousand six hundred and ninety-eight dollars and twenty-seven cents*, (\$1,698 27;) being the amount as on hand per my summary of October, 1862."

The evidence of Captain Scott on the trial of Dennis Jackson for this crime, and before referred to, says: "I found money in the possession of the prisoner to the amount of sixty-five dollars (\$65) in bills."

"There was also two hundred and thirty-two dollars (\$232) which the prisoner claimed was stolen from him by one Lewis Lowry, and which sum the prisoner afterwards confessed was stolen from Captain Hawes. *This also was in bills.*" This witness then states how they found the rest of the money "in a field, in an old cartridge box. There were sixteen dollars and a quarter (\$16 25) in silver, very much tarnished, twenty dollars (\$20) in gold, and three hundred and twenty-five dollars (\$325) in bills. I know much the larger proportion of the contents of the safe were bills." The petitioner swears that he examined the safe but a few hours before it was robbed, and counted the money; that it was bills—that the contents were bills and receipts. How did this witness know the contents of the safe, or that the larger proportion of those contents were bills? What else was in the safe? Was there any other description of money? What was the proportion of bills? On these points the witness says nothing, but the petitioner speaks with reasonable clearness. In his statement of Jackson's confession to him this witness gives, as part of it: "He (Denmark) did not take half of the gold and silver; not more than two or three pieces of gold, and one or two of silver; and he told me I might keep the rest." The witness says that Jackson told him that he got this gold and silver out of Captain Hawes's safe; but that fact is incongruous with the frequent and uniform account which Captain Hawes the next morning, and afterwards, gave of the contents of the safe. He did not say or intimate there was gold or silver or any money but bills in it; and yet, according to Jackson's evidence, there must have been some thirty dollars in gold and twenty dollars in silver. This incongruity, and the threats and promises made by Captain Scott to Jackson, which procured his confession, and the non-production of Denmark, the body-servant of Captain Hawes, as a witness on his trial, must cause distrust, if not disbelief, of Jackson's confession and evidence.

Captain Hawes says in his affidavit, and in his conversations concerning this affair, that the safe was taken from under his bed in his tent while he was asleep. Jackson, in his confession, says it was brought to him at the fence close by the tent, early in the night, by Denmark, who then told him that the captain was out. This statement of Captain Hawes was at least a careless one—one that he did not and could not know whether it was true. The only knowledge he could have was that his safe was under his bed the day or night before, and was missing in the morning. But there is another feature in the case which shows that his account of the affair is entitled to but little consideration. His petition bears date January 22, 1863, and his affidavit accompanying it January 7, 1863. He sets forth in the affidavit that the amount in his safe and stolen from him was \$1,698 27 in *treasury bills*; and neither in his petition nor affidavit does he admit the reception of any portion of the money, but by implication asks to be credited with the whole amount.

There is also among the papers a sworn certificate of Captain H. B. Scott, dated 11th November, 1863, in which he says: "That about the last of December, 1862, as near as I can remember, Dennis Jackson, a colored teamster

in the brigade train of the brigade (Gordon's) of which I am the assistant adjutant general, was discovered by me to have stolen a safe containing government funds from Captain M. M. Hawes, A. Q. M., some months before, (4th November;) that charges were preferred by me against the said Dennis Jackson "It appears from this witness's evidence on the trial of Jackson that the latter had confessed to him, and surrendered to him so much of this money stolen from Captain Hawes as he had retained, which, according to Scott's evidence, was more than \$16 25 in silver, \$20 in gold, and \$325 in bills. This witness further says: "There was also two hundred and thirty-two dollars (\$232) which prisoner claimed was stolen from him by one Lewis Lowry, and which sum the prisoner afterwards confessed was stolen from Captain Hawes. *This also was in bills.*" This last statement is made as of a fact to which the witness was speaking of his own knowledge. Was this last sum obtained by witness? If found, of course he reclaimed it. It cannot be doubted that, in a reasonable time, he informed Captain Hawes of his recovery for him of those several sums of money, as early as some time in December, 1862, or at least in January or February following.

The letter of Robert Rutherford, from the Quartermaster General's office, to the chairman of the Committee on Military Affairs of the House of Representatives, dated 8th April, 1864, says: "That on examination of the accounts of Captain Hawes, on file in this office, it appears that he claims a credit on his account current for November, 1862, for \$1,698 27, as money stolen from him November 4, 1862. No other explanation of the loss is given, and it does not appear that any portion of this fund has been accounted for by him to this office as returned."

There is also among the papers a certificate upon honor of Captain Hawes, dated New Orleans, March 5, 1864, reiterating generally the loss of his safe; and which would seem to be intended as a reassertion of his claim for a credit to the amount of the money he alleges to have been stolen from him, in which he says nothing of the reclamation of any part of the lost money. He is thus presented in the attitude of claiming in the department, and prosecuting before Congress for about two years, to be credited with \$1,698 27, for public money stolen from him, of which he had recovered a large amount, without any abatement of the sum or disclosure of the true state of fact by him.

It appears also in the case, that Jack Denmark was Captain Hawes's trusted and esteemed body-servant; that whilst he was in that service he conceived the project of this theft or robbery of his master, procured Jackson to become his accomplice in its execution, and received from him the largest portion of the spoils. He, as far as it appears, is still unwhipt of justice. He is not brought to any confession, or surrender of stolen money by threats or promises, or to an arraignment and condemnation to the penitentiary for his crime, as Jackson was; and for what reasons we know not. Before Captain Hawes petitioned Congress for the relief he asks, he should in good time have taken proper steps to have held his own servant, Jack Denmark, to a proper accountability, and have sought the chance of reclaiming so much of the money as he got.

The committee are constrained by the facts in the papers to take the positions, 1. That the affidavit and statement of Captain Hawes cannot be held to strengthen his case. 2d. That the loss of the public funds is not made out by sufficient credible proof. 3d. That if the loss of public funds by theft or robbery were conceded, there is not reliable evidence to establish its amount or its proximate amount. Wherefore the committee recommend that the House joint resolution be rejected.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 1, 1865.—Ordered to be printed.

Mr. CLARK, from the Committee on Claims, made the following

REPORT.

The Committee on Claims, to whom was referred the petition and papers of John Robb, report as follows :

The petitioner sets forth that he was appointed and duly commissioned to act as Secretary of War at sundry times, according to the account stated, being at the time he received said appointments chief clerk of the War Department.

The account rendered by the claimant is as follows :

"The United States to John Robb, Dr., for services as Acting Secretary of War.

From	8 June, 1832, to 15 June, 1832, inclusive,	7 days.
"	16 July, 1832, to 6 Oct., 1832,	" 82 "
"	12 Nov., 1832, to 17 Nov., 1832,	" 5 "
"	6 May, 1833, to 8 May, 1833,	" 3 "
"	6 June, 1833, to 8 Aug., 1833,	" 64 "
"	26 Sept., 1833, to 9 Oct., 1833,	" 14 "

175 days,

at the rate of \$6,000 per annum, making \$2,876 73."

It appears that the First Auditor, on the 10th of August, 1849, reported as due the claimant the sum of \$2,876 73, and upon that report no further action was taken in the matter by the department.

July 16, 1855, the petitioner came with this claim before the Court of Claims, and on the 12th of May, 1856, that court reported the case to Congress, with a recommendation that a bill be passed for the relief of the petitioner; that report and papers were duly referred to this committee on the second of February last, and after a careful examination thereof the committee make the following conclusions :

In the consideration of this claim, two propositions present themselves at the outset :

1st. Can a salaried officer hold two offices, and be entitled to two salaries, at the same time.

2d. That by the statute of 1818 fixing the compensation of clerks and persons employed at a fixed salary this claim is barred.

On the first point the committee have established already several precedents, and it would seem almost to amount to a rule, for the decisions have been uniform, and in many cases quite elaborate.

In the case of Thomas Fillebrown, which was considered in the 26th and 27th Congresses, the committee say as follows: "The petitioner was a clerk

in the Navy Department at a salary, and was appointed secretary of the naval commissioners of the hospital fund, and he undertook to hold both offices, and it is to be presumed performed the duties of both satisfactorily; but the committee say that in their judgment, whenever an individual shall be appointed to a clerkship in either of the departments or to *any other* office, the government is thereupon entitled to all the services of the officer appointed, and that if, instead of laboring six hours per day, (the ordinary time of service,) should the interests of the government ever require that the daily service should be increased to ten or even twelve hours, the clerk in such case would have no right to complain, and would have, under the circumstances, no ground for claim for extra compensation."

The committee are of opinion that the same principle applies in this case, and that a salaried officer can have no just claim for compensation for any such pretended services; that a salary paid by the government to any officer entitles the government to all the services which such officer can render within the term for which the salary is stipulated. The case of R. K. Cole, reported by the committee to the 26th Congress, is a case in which a similar doctrine is established; and the committee remark in that case, "that it is a principle which has been repeatedly recognized by Congress that salaried officers have no just claim for extra compensation for any increase of duties imposed upon them." The case of F. R. Dorsett recognizes the same principles.

In the case of Joseph Nourse, in the 24th Congress, the committee refused to allow the claim for the foregoing reasons.

Lt. Page performed the duties of purser in the navy, and claimed extra pay therefor, and it was refused on the same ground by the report of this committee to the 32d Congress.

But this is not the case where the government having imposed a duty, it can be contended that there was an implied promise to pay a reasonable compensation, as was contended in some of the above-mentioned cases.

In this case the petitioner undertook to perform the duties of two distinct offices at two distinct salaries, and claims pay for services in both. The assumption of the duties of Secretary of War was optional on his part, as it was for which service he would be paid; but having received his pay in one he has no claim for the other.

In the consideration of this case the Court of Claims cite the case of Asbury Dickins as a precedent. That case was decided by that court in favor of the claimant on the ground, as stated in the decision that there was no law to prevent the exercise of the functions of two offices under government at the same time, and therefore there could be no equity against paying for the services.

The fallacy of such reasoning must be obvious to a candid reflection, and the admission of such doctrine would open a door to great abuse of power.

In the same decision the court say, the holding of two offices at the same time as a matter of policy would be highly objectionable in most cases as a permanent arrangement. Yet the same court finds no difficulty in undertaking to establish a precedent upon grounds admitted by them to be "highly objectionable in most cases."

And for this, as well as other reasons, the committee conclude that it could never have been the intention of law that salaried officers of government should be paid for such services as the good management of the affairs of the government would never admit of being performed, and which as a permanent arrangement would be so objectionable.

Again, the decision in the Asbury Dickins case is quite unwarrantable, under the law of 1818, entitled, "An act to regulate and fix the compensation of clerks in the different offices," as follows:

"Sec. 9. *And be it further enacted*, That the compensation allowed by this act

STATES

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*House resolution
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IN THE SENATE OF THE UNITED STATES.

FEBRUARY 1, 1865.—Ordered to be printed.

MR. DOOLITTLE made the following

REPORT.

[To accompany joint resolution H. R. No. 38.]

The Committee on Indian Affairs, to whom was referred House resolution No. 38, having had the same under consideration, report as follows:

That by the treaty of 1833, made at Chicago, the United Nation of Chipewya, Ottawa, and Pottawatomie Indians ceded to the United States all their lands south and west of Lake Michigan, in exchange for 5,000,000 of acres west of the Mississippi river, and certain annuities, and also other ample provisions for schools and the encouragement of the domestic arts, and also for the erection of farm-houses, Indian houses, blacksmith shops, and mills, to be established, as your committee construe the treaty, for the benefit of the nation when they should emigrate to their new homes.

A portion of said Indians, however, residing upon some small reservations in Michigan, in consideration of being entitled to the benefits of the treaty with the United Nation, and becoming a part thereof, by a supplemental treaty, in consideration of the sum of one hundred thousand dollars, and an annual annuity of two thousand dollars for twenty years, in addition to the sums and annuities provided for in the treaty, ceded these reservations also, and agreed to remove therefrom within three years from the date of the treaty.

But it appears that about two hundred and fifty of these, being Catholics, were "on account of their religious creed," by another provision in the nature of a second supplemental treaty, permitted to detach themselves from the Nation, and, instead of emigrating with it to its new homes west of the Mississippi, to remove to the northern part of the peninsula of Michigan, and unite their fortunes and interests with another small tribe of Indians at l'Arbre Croche.

It seems, from evidence before the committee, they attempted to make some arrangement with the Indians there, but for some reason, and probably from their own dissatisfaction with the country there, they returned with Pokagon, and purchased some lands of the United States in Michigan, upon which they have since resided. It is true the treaty required them to "remove to the northern part of the peninsula," and "in case of such removal" their proportion of the annuities should be paid at l'Arbre Croche, and they have not strictly complied with its terms. But the committee think that the United States, on their part, have waived a strict fulfilment by allowing them to purchase and take the title in fee simple to another portion of its public domain in Michigan, where they have ever since resided, and that they are, notwithstanding, entitled to their just proportion of all annuities payable to them under former treaties, as

well as that arising under the supplementary treaty for the sale of the Michigan reservations.

Besides, the action of the department, which appears by the following letters, confirms this view of the committee. It is a clear acknowledgment that their right to their just proportion of annuities was not forfeited by reason of their not removing to the northern part of Michigan.

Extract from a letter of Robert Stuart, acting superintendent Indian Affairs, dated at Detroit, March 25, 1843, and directed to Hon. T. Hartley Crawford, Commissioner of Indian Affairs.

A delegation of the Pottawatomies, who resided on the reservation in Michigan, prior to the treaty held at Chicago in 1833, and who have always refused to emigrate, called upon me a few weeks since to represent their grievances also. They stated that the chief, Pokagon, (father of one of them,) as also several of his band, were Catholics at the time of signing the treaty, and refused to emigrate west, as it would cause them to recede again into barbarism; that permission was granted them by said treaty to settle in northern Michigan, where they would enjoy the instruction of priests, and receive their proportion of the annuities; that they in due time applied to the Ottawas of l'Arbre Croche, near Mackinac, for permission to amalgamate with them, which, owing to the interference of some evil-disposed whites, was refused; that they then purchased lands of the United States, which a portion of them still occupy, (except forty acres appropriated to their mission.) They urgently plead that the department take their cause into favorable consideration, and allow them a just proportion of the annuities, (which are now all paid on the Missouri,) according to the stipulation on the 599th and 600th page of the treaty book. They say that there are from two hundred to two hundred and fifty of their tribe still in northern Indiana and Michigan. A number of these as well as of the Ottawas are very desirous of becoming citizens, and there are some hundreds, I have no doubt, worthy of the boon; but how their application will be responded to is another question. I regret the necessity of troubling you with so many questions as have of late been pressed upon me, but the paucity of information left in the office by my predecessor renders it indispensable for me to know what course of policy has or should be adopted.

I am, respectfully, your obedient servant,

ROBERT STUART,
Acting Superintendent Indian Affairs.

OFFICE INDIAN AFFAIRS, May 17, 1843.

SIR: My letter to you of the 19th instant informed you of the views of this office respecting the right of the Chippewas of Swan creek and Black river, yet in Michigan, to participate in the benefits of the annuity due the bands, the whole of which has heretofore been remitted west.

I now reply to the remaining portion of your letter of the 25th March, viz: relative to the Pottawatomies who claim the privileges granted under the supplemental article to the treaty with the united bands of Chippewas, Ottawas, and Pottawatomies, of September, 1833, which is in the following words:

"And as since the signing of the treaty a part of the band residing on the reservations in the Territory of Michigan have requested, on account of their

religious creed, permission to remove to the northern part of the peninsula of Michigan, it is agreed that, in case of such removal, the just proportion of all annuities, payable to them under former treaties, and that arising from the sale of the reservation on which they now reside, shall be paid them at l'Arbre Croche." By the tenor of this article it would seem that their claim is well founded, and that they are entitled to their numerical proportion of those annuities payable to the tribe under the treaty of 1829, and also under the supplementary article of the treaty of 1833, amounting together to \$18,000. Therefore, estimating the number of the Chicago Indians at 2,834, including the 250 represented by you, the share that would be to the latter would amount to \$1,587 50, or \$6 35 to each individual; accordingly, that sum will be remitted to you, to be paid out to them as their share of the annuities.

Very respectfully, your obedient servant,

T. HARTLEY CRAWFORD,

Commissioner.

ROBERT STUART, Esq.,
Detroit, Michigan.

By the construction then given by the Commissioner, their rights to a proportion of all *the annuities* was acknowledged by the government. But in stating the amount of those annuities the Commissioner evidently made the mistake of omitting several permanent annuities, and annuities for terms of years, to which they were as clearly entitled as they were to those he did acknowledge and pay. Looking into the treaties then existing, and basing our calculations upon data given by the department as to the number of Indians from time to time, we find the true statement to be as follows:

PERMANENT ANNUITIES.

Date of treaty.	Amount.
Treaty of 1795	\$1, 000
Treaty of 1809	500
Treaty of 1818	2, 500
Treaty of 1823	2, 000
Treaty of 1829	16, 000

LIMITED ANNUITIES.

Treaty of 1821, 20 years, (five years to run from 1836).....	5, 000
Treaty of 1826, 22 years, (twelve years to run from 1836).....	2, 000
Treaty of 1824, 20 years, (twelve years to run from 1836).....	1, 000
Treaty of 1832, 20 years, (sixteen years to run from 1836).....	15, 000
Treaty of 1832, 20 years, (sixteen years to run from 1836).....	20, 000
Treaty of 1832, 12 years, (eight years to run from 1836).....	15, 000
Treaty of 1833, 20 years, (eighteen years to run from 1836).....	14, 000
Treaty of 1833, 20 years, (eighteen years to run from 1836).....	2, 000
Total	<u>96, 000</u>

It is estimated at the department upon the best data they have that the number of these Indians in Michigan has remained the same, while the whole number of the united nation has steadily and greatly diminished. At the end of the first decade, from 1836 to 1846, they had diminished, according to the estimates of the department, from 6,180 to 4,250; during the second decade, from 1846

to 1856, from 4,250 to 2,250. Basing our computations upon these data furnished by the department, the account stands as follows, beginning A. D. 1836 :

6,180 Indians, per capita of \$96,000.....	\$15 53	
250 Indians, for five years.....		\$19,412 50
6,180 Indians, per capita of \$91,000.....	14 72	
250 Indians, for three years.....		11,040 00
6,180 Indians, per capita of \$76,000.....	12 20	
250 Indians, for two years.....		6,145 00

A. D. 1846.

4,250 Indians, per capita of \$76,000.....	\$17 88	
250 Indians, for two years.....		\$8,940 00
4,250 Indians, per capita of \$73,000.....	17 17	
250 Indians, for four years.....		17,170 00
4,250 Indians, per capita of \$38,000.....	8 94	
250 Indians, for two years.....		4,470 00
4,250 Indians, per capita of \$22,000.....	5 17	
250 Indians, for five years.....		6,462 50
2,250 Indians, per capita of \$22,000.....	9 77	
250 Indians, for five years, including 1864.....		12,212 50

We find the true amount total of their proportion of annuities...	85,852 50
Total of payments made, (being \$1,587 50 per annum for twenty-two years,) which is to be deducted.....	34,925 00

Balance due.....	50,927 50
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The committee, therefore, recommend that sum to be paid to the Michigan Indians out of the funds belonging to the United Nation now in the control of the department.

While your committee agree with the committee of the other house that Commissioner Crawford by mistake failed to carry out the principle adopted by him, by giving them, in fact, their just proportion of all annuities under former treaties and under the supplementary treaty of Chicago, and that it is just that such principle should now be applied, and that they should now receive their just proportion of annuities under *all the treaties* in which they had shared, as well as to the annuities under the treaty of 1829, and supplementary treaty of 1833, they are at the same time decidedly of the opinion that the only just construction to be given to that supplementary article is, that in case they did not remove with the nation west, they were entitled to share in the annuities only.

These Indians who were thus specially permitted to detach themselves from the fortunes and the destiny of their tribe, and to remain in Michigan and become citizens there instead of going with their nation beyond the Mississippi, became thereby separated from their nation as such; they became, in fact, a distinct and separate people, occupying the anomalous position of white men and Indians, citizens of Michigan and yet members of a tribe with special rights of their own, among which was a right to the schools and mills and agricultural advantages of Michigan. They must be deemed, therefore, to have surrendered or given up any other or further interest in the other provisions made in the treaty for the benefit of the nation generally, excepting only those rights expressly reserved, among which was a right to share in the annuities—a right in its nature essentially personal. They could therefore have no rights in the 5,000,000 acre tract, or any fund or proceeds to grow out of it, while thus remaining in Michigan, detached from their nation west of the Mississippi.

Nor, in the opinion of this committee, are the funds set apart for the erection of mills and the establishment of schools to be regarded as annuities within the meaning of this supplemental treaty, by which they were separated from the United Nation of Chippewa, Ottawa, and Pottawatomie Indians. They withdrew from that nation, and by that withdrawal surrendered all rights to its domain west of the Mississippi, to its mill fund and school fund and agricultural fund. Reserving only their share of annuities, they preferred to remain and have the benefit of the society, schools, agriculture, and manufactures of Michigan. They have become, and are now in fact, citizens and electors of the State of Michigan. Your committee are assured many of them are good citizens and thrifty farmers. They have reaped the fruits of the superior advantages which they have enjoyed over their less fortunate brethren, and must be content to share in what the treaty clearly gives them.

The committee therefore report back the joint resolution of the House with amendments to conform the same to the principles contained in this report.

It was found, upon examination and consideration, that the whole sum could not be paid to said Indians in Michigan in one sum, without exhausting the annuities payable to the Indians in Kansas, and that, therefore, it should be divided into five annual payments. While this will do justice to the former, it will not impoverish or oppress the latter. It is a matter in which the United States have no other interest than as guardians of both.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 2, 1865.—Ordered to be printed.

Mr. CLARK made the following

REPORT.

[To accompany bill H. R. No. 161.]

The Committee on Claims, to whom was referred bill H. R. No. 161, entitled "An act for the relief of Josiah O. Armes," with the accompanying petition and documents, respectfully report :

At the breaking out of the present rebellion, Josiah O. Armes, the claimant, was the owner and in possession of a valuable house and out-buildings at Anandale, Fairfax county, Virginia. The house was a valuable one, and all the testimony in the case tends to show it to have been worth twelve or fourteen thousand dollars. It was built of stone, three stories high, with a cupola on top, fourteen feet high, with windows for lighting the stairway beneath. The house was octagonal in form, and about two hundred feet in circumference. There were two verandas extending around it, well latticed and supported by two tiers of columns. The roof of the house was covered with tin, and the cornice was large and heavy. The house contained thirty rooms, some of which were large, including seven parlors. The building of the house was commenced in 1856 and completed in 1860, and was intended for a female seminary. There were in the house twenty-eight windows, and the rooms were well ventilated. The walls were fourteen inches in thickness, and there were four firmly built brick chimneys. The foundation was good, and the wood-work painted outside and in.

The master-builder of the house testifies, that from his knowledge at the time, it cost the said Armes ten thousand dollars. There were attached to it a servants' house, a granary, barns, sheds, and carriage-house.

The last of November, or the first of December, 1861, this house and buildings were destroyed by order of Colonel R. J. Belge, of the 68th regiment New York volunteers.

Mr. Armes had been driven out from the house before its destruction; and the country about it seems to have been a sort of debatable or skirmish ground—sometimes held by Union troops, and sometimes by the rebels. Mr. Armes was, and is, a thoroughly loyal citizen. In the commencement of the war he was of service to our troops in giving information of the movement and situation of the rebels; and General Heintzelman, in a letter submitted to the committee, acknowledges the valuable aid he afforded.

At or about the time the property was destroyed by order of Colonel Belge, the buildings seem to have been used by the rebel troops both as an observatory of the movements of the Union troops, and as a stronghold from which they fired upon our men as occasion offered. To prevent its being longer so used Colonel

Belge ordered it, as a military necessity, to be destroyed. General Heintzelman, in a letter dated January 18, 1861, says he heard of the matter at the time that the buildings were burned by our troops, and it was a military necessity. He also adds, that "the mother" (meaning Mrs. Armes, the wife of the claimant, and mother of a young man then in our army) "came in one dark night last summer to give us information, at the risk of her life."

The committee have not been able to obtain the evidence of Colonel Belge, who ordered the property to be destroyed, for the reason that he has left the service, and his place of residence has not been ascertained. There is, however, the testimony of several persons, officers in and members of his regiment, who say that they heard Colonel Belge give the order for the destruction of the property at the time it was burned.

The House of Representatives have reported a bill for the relief of Mr. Armes, to the amount of nine thousand five hundred dollars, and the committee are satisfied that the property was of that value, and more; that it was destroyed by the Union troops as a military necessity, under order of their commander; they therefore recommend the passage of the House bill.

Mr. Armes is an aged man; he is utterly impoverished by the destruction of this property; he is patriotic, having had a son in the Union army, and having exerted himself to aid the Union cause in various ways. His family was driven from their home, and the wife, who risked her life to bring information to our troops in the darkness of the night, is since dead. The case appeals strongly to our sympathies, but equally and more so to our sense of justice.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 2, 1865.—Ordered to be printed

Mr. POMEROY made the following

R E P O R T.

[To accompany bill S. No. 70.]

The Committee on Claims, to whom was referred Senate bill No. 70, entitled "A bill to enable the accounting officers of the treasury to settle the claims of the State of Kansas," respectfully report :

This bill is to enable the accounting officers of the Treasury Department to settle the claim of the State of Kansas, made under the provisions of an act of Congress entitled "An act for indemnifying the States for expenses incurred by them in the defence of the United States," approved July 27, 1861.

On the 18th of April, 1862, a claim of the State of Kansas, incurred as above, was filed in the office of the Third Auditor of the Treasury Department by H. R. Dutton, agent of the State, amounting to the sum of twelve thousand three hundred and fifty-one dollars and four cents. (\$12,351 04.)

On the examination of the vouchers, some of them were found informal and not according to the rules governing the settlement of such claims; explanations were required, and the papers were returned to the State and delivered to Thomas Carney, the governor, on the 27th of June, 1863.

At the massacre at Lawrence, Kansas, all papers pertaining to the claim were destroyed, they being then in the possession of George W. Collamore, quartermaster general of the State, who resided at that place, and the duplicates which had been prepared were destroyed with them.

It seems proper, under these circumstances, that authority should be given to the proper officers of the Treasury Department to receive satisfactory evidence, in lieu of these vouchers, on which to base an adjustment of this claim, limiting the amount to be allowed to the amount originally proved by the State, viz: twelve thousand three hundred and fifty-one dollars and four cents, (\$12,351 04,) according to the vouchers submitted of which memoranda were made in the office of the Treasury Department.

The house and entire possessions of General Collamore were destroyed, and he lost his life in said massacre.

The committee recommend that the bill be amended so as to conform to the foregoing, and be passed as amended.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 6, 1865.—Ordered to be printed.

FEBRUARY 10, 1865.—Ordered that 5,000 additional copies be printed.

IN THE SENATE OF THE UNITED STATES,

December 15, 1864.

On motion by Mr. ANTHONY,

Resolved, That the Joint Committee on the Conduct of the War be directed to inquire into and report the facts concerning the attack on Petersburg, on the 30th day of July, 1864.

Attest :

J. W. FORNEY, *Secretary*.

Mr. WADE submitted the following

REPORT.

The Committee on the Conduct of the War, in pursuance of the foregoing resolution, submit the following report, with accompanying testimony :

In the attack upon the enemy's lines before Petersburg, the 16th, 17th, and 18th of June, 1864, the ninth corps gained an advanced position beyond a deep cut in the railroad, within about one hundred and twenty-five yards of the enemy's lines. Just in rear of that advanced position was a deep hollow, where work could be carried on entirely out of sight of the enemy.

Within a few days after that position had been gained, Lieutenant Colonel Henry Pleasants, 48th Pennsylvania volunteers, made the suggestion to General Potter, commanding the division, that a mine could be run under one of the enemy's batteries, by means of which it could be blown up, and an opening made in the enemy's lines. The suggestion having been submitted to General Burnside, it was approved by him, and work was commenced upon the mine on the 25th of June.

It will be seen from the testimony of Lieutenant Colonel Pleasants that he labored under disadvantages in the successful accomplishment of this important work, which would have deterred a man of less energy and determination. It was not merely the evident lack of faith in the success of the enterprise shown by all the officers of high rank but his division and corps commanders, but that lack of faith was accompanied by an entire failure to furnish the assistance and implements necessary to the success of the undertaking within a reasonable time. And your committee take pleasure in commending the zeal, energy, and persistence displayed on that occasion by Lieutenant Colonel Pleasants and the men of the 48th Pennsylvania regiment, under his command. And the failure of the attack, resulting from causes with which Colonel Pleasants could have no connexion, should not be allowed to detract from the meed of praise due to that officer.

The testimony of Colonel Pleasants, on that point, is as follows :

"Question. Can you fix the time when you mentioned the matter to General Burnside, when you commenced the work, &c. ?

"Answer. The work was commenced at 12 o'clock, noon, on the 25th of June, 1864. I saw General Burnside the night previous, and commenced the mine right off—the next day.

"Question. Did you have any communication with any other commanders on the subject ?

"Answer. No, sir.

"Question. About how many men did you employ in the work ?

"Answer. My regiment was only about four hundred strong. At first I employed but a few men at a time, but the number was increased as the work progressed, until at last I had to use the whole regiment, non-commissioned officers and all. The great difficulty I had was to dispose of the material got out of the mine. I found it impossible to get any assistance from anybody ; I had to do all the work myself. I had to remove all the earth in old cracker boxes. I got pieces of hickory and nailed on the boxes in which we received our crackers, and then iron-cladded them with hoops of iron taken from old beef and pork barrels.

"Question. Why were you not able to get better instruments with which to construct so important a work ?

"Answer. I do not know. Whenever I made application I could not get anything, although General Burnside was very favorable to it. The most important thing was to ascertain how far I had to mine, because if I fell short of or went beyond the proper place the explosion would have no practical effect. Therefore, I wanted an accurate instrument with which to make the necessary triangulations. I had to make them on the furthest front line, where the enemy's sharpshooters could reach me. I could not get the instrument I wanted, although there was one at army headquarters ; and General Burnside had to send to Washington and get an old-fashioned theodolite, which was given to me.

"Question. Do you know any reason why you could not have had the better instrument which was at army headquarters ?

"Answer. I do not. I know this : that General Burnside told me that General Meade and Major Duane, chief engineer of the army of the Potomac, said the thing could not be done ; that it was all clap-trap and nonsense ; that such a length of mine had never been excavated in military operations, and could not be ; that I should either get the men smothered for want of air or crushed by the falling of the earth, or the enemy would find it out, and it would amount to nothing. I could get no boards and lumber supplied to me for my operations. I had to get a pass, and send two companies of my own regiment with wagons outside of our lines to rebel saw-mills and get lumber in that way, after having previously got what lumber I could by tearing down an old bridge. I had no mining picks furnished me, but had to take common picks and have them straightened for my mining picks.

"Question. Was General Burnside the only officer who seemed to favor the mine ?

"Answer. The only officer of high rank, so far as I learned. General Burnside, the corps commander, and General Potter, the division commander, seemed to be the only high officers who believed in it.

"Question. How long from the time you commenced the mine did it take you to finish it ?

"Answer. I finished the whole thing, lateral galleries and all, ready to put the powder in, on the 23d of July.

"Question. How long would it have taken you had you been supplied with the proper tools and instruments ?

"Answer. I could have done it in one-third or one-fourth of the time. The greatest cause of the delay was taking the material out.

"Question. How far did you have to carry it ?

"Answer. The whole length of the mine, and to where it could be deposited, and every night I had to get the pioneers of my regiment to cut bushes and cover it up where it had been deposited ; otherwise the enemy could have climbed up the trees in their lines and seen the pile of newly excavated earth.

"Question. What was the length of the mine ?

"Answer. The main gallery was $510\frac{3}{4}$ feet in length ; the left lateral gallery was 37 feet in length, and the right lateral gallery was 38 feet. The magazines were to be placed in the lateral galleries.

"Question. What were the dimensions of the galleries ?

"Answer. They varied at different places ; I suppose the average was $4\frac{1}{2}$ by $4\frac{1}{2}$ feet."

On the 26th of July, at the request of General Meade, the following plan of attack was submitted to him by General Burnside :

"HEADQUARTERS 9TH ARMY CORPS,

July 26, 1864.

"I have the honor to acknowledge the receipt of your notes this morning by Captains Jay and Bache ; also of a telegram from the commanding general, relating to the same subject.

"It is altogether probable that the enemy are cognizant of the fact that we are mining, because it is mentioned in their papers, and they have been heard to work on what are supposed to be shafts in close proximity to our galleries. But the rain of night before last has no doubt much retarded their work ; we have heard no sounds of work in them, either yesterday or to-day ; and nothing is heard by us in the mine but the ordinary sounds of work on the surface above. This morning we had some apprehension that the left lateral gallery was in danger of caving in from the weight of the batteries above it, and the shock of their firing. But all possible precautions have been taken to strengthen it, and we hope to preserve it intact.

"The placing of the charges in the mine will not involve the necessity of making a noise. It is therefore probable that we will escape discovery if the mine is to be used within two or three days. It is nevertheless highly important, in my opinion, that the mine should be exploded at the earliest possible moment consistent with the general interests of the campaign. I state to you the facts as nearly as I can, and, in the absence of any knowledge as to the meditated movements of the army, I must leave you to judge the proper time to make use of the mine. But it may not be improper for me to say that the advantages reaped from the work would be but small if it were exploded without any co-operative movement.

"My plan would be to explode the mine just before daylight in the morning, or at about five o'clock in the afternoon. Mass the two brigades of the colored division in rear of my first line, in columns of division—"double columns closed in mass," the head of each brigade resting on the front line ; and as soon as the explosion has taken place, move them forward with instructions for the division to take half distance, and as soon as the leading regiments of the two brigades pass through the gap in the enemy's line, the leading regiment of the right brigade to come into line perpendicular to the enemy's line by the right companies 'on the right into line wheel,' the left companies 'on the right into line,' and proceed at once down the line of the enemy's works as rapidly as possible ; and the leading regiment of the left brigade to execute the reverse movement to the left, running up the enemy's line. The remainder of the columns to move directly towards the crest in front as rapidly as possible, diverging in such a way as to enable them to deploy into column of regiments, the right column making as nearly as possible for Cemetery hill. These columns

to be followed by the other divisions of the corps, as soon as they can be thrown in.

"This would involve the necessity of relieving these divisions by other troops before the movement, and of holding columns of other troops in readiness to take our place on the crest, in case we gain it, and sweep down it. It would, in my opinion, be advisable, if we succeed in gaining the crest, to throw the colored division right into the town. There is a necessity for the co-operation, at least in the way of artillery, of the troops on our right and left. Of the extent of this you will necessarily be the judge. I think our chances of success in a plan of this kind are more than even.

"The main gallery of the mine is 522 feet in length; the side galleries about forty feet each. My suggestion is, that eight magazines be placed in the lateral galleries, two at each end, say a few feet apart, in branches at right angles to the side gallery, and two more in each of the side galleries, similarly placed by pairs, situated equi-distant from each other and the end of the galleries; tamp, beginning at the termination of the main gallery, say one hundred feet, leaving all the air space in the side galleries. Run out some five or six fuses and two wires, to render the ignition of the charges certain. I propose to put in each of the eight magazines from twelve to fourteen hundred pounds of powder; the magazines to be connected by a trough of powder instead of a fuse.

"I beg to enclose a copy of a statement from General Potter on the subject:

"I would suggest that the powder train be parked in a woods near our ammunition train, about a mile in rear of this place. Lieutenant Colonel Pierce, chief quartermaster, will furnish Captain Strang with a guide to the place. I beg also to request that General Benham be instructed to send us, at once, eight thousand sand-bags, to be used for tamping and other purposes.

"A. E. BURNSIDE, *Major General.*

"Major General HUMPHREYS,

"Chief of Staff."

General Burnside testifies that, under his orders, the division of colored troops, under General Ferrero, had been drilling for some weeks with the view of making the attack in the manner set forth in the plan submitted to General Meade. His reasons for selecting that division for the advance, and which were stated to General Meade in an interview with him on the 28th of July, were, that, in his opinion, they were in a better condition to make a charge than either of the white divisions. The colored troops had not been in any very active service, had not been exposed much, were not broken down by hard work, and had, besides, been drilled for some weeks with special reference to this charge. The white divisions, on the contrary, had performed very arduous duties since the commencement of the campaign, and since they had occupied the position before Petersburg had been in such close proximity to the enemy that no man could raise his head above the parapets without danger of being fired at. They had been in the habit, during the whole of that time, of approaching the main line by covered ways, and of using every possible means of covering themselves from the fire of the enemy. In the opinion of General, Burnside, in which he was sustained by the opinion of his inspector general, the white divisions were not then in a condition to make a vigorous charge.

General Meade objected to the colored troops being placed in the advance. His testimony upon that subject is as follows:

"Prior to issuing the orders for the assault, General Burnside told me it was his intention to place his colored division in the advance of the assaulting column. I objected to his doing so, on the ground, not that I had any reason to believe that the colored troops would not do their duty as well as the white troops, but that, as they were a new division and had never been under fire, had

never been tried, and as this was an operation which I knew beforehand was one requiring the very best troops, I thought it impolitic to trust it to a division of whose reliability we had no evidence. Therefore I thought that he ought to take one of his white divisions that he knew from long service could be relied upon. General Burnside objected. I told him, then, that in view of his wishes upon the subject I would report the matter to the lieutenant general, state to him my reasons, and those of General Burnside, and let him decide. If he should decide that General Burnside's arguments were sound and mine were wrong, then I would yield. The matter was referred to General Grant, and he confirmed my view that it would be impolitic in a critical operation of that kind to take troops that were untried and place them in the advance, and it was upon that ground that General Burnside's opinion was overruled."

General Grant's testimony upon this point is as follows :

"General Burnside wanted to put his colored division in front, and I believe if he had done so it would have been a success. Still I agreed with General Meade in his objection to that plan. General Meade said that if we put the colored troops in front, (we had only that one division,) and it should prove a failure, it would then be said, and very properly, that we were shoving those people ahead to get killed because we did not care anything about them. But that could not be said if we put white troops in front. That is the only point he (General Meade) changed after he had given his orders to General Burnside."

Instructions were accordingly given to General Burnside to select one of his divisions of white troops to lead the assault ; and the order of assault was also changed in respect to the sweeping down the enemy's lines to the right and left of the crater by the leading regiments of the assaulting column. General Burnside testifies that he received the instructions to select a division of white troops to lead the assault, in the afternoon of the day preceding the morning for the assault. As there were reasons for assigning each one of the three white divisions to that duty, he determined to decide the question by lot, which was done. General Ledlie drew the lot to lead the advance, with his division.

The mine was charged, and preparations made to spring it on the morning of the 30th of July.

The following orders were issued by General Meade :

ORDERS.

HEADQUARTERS ARMY OF THE POTOMAC, July 29, 1864.

The following instructions are issued for the guidance of all concerned :

1. As soon as it is dark, Major General Burnside, commanding 9th corps, will withdraw his two brigades under General White, occupying the intrenchments between the Plank and Norfolk roads, and bring them to his front. Care will be taken not to interfere with the troops of the 18th corps moving into their position in rear of the 9th corps. General Burnside will form his troops for assaulting the enemy's works at daylight of the 30th, prepare his parapets and abatis for the passage of the columns, and have the pioneers equipped for work in opening passages for artillery, destroying enemy's abatis, and the intrenching tools distributed for effecting lodgment, &c., &c.

2. Major General Warren, commanding 5th corps, will reduce the number of his troops holding the intrenchments of his front to the minimum, and concentrate all his available force on his right and hold them prepared to support the assault of Major General Burnside. The preparations in respect to pioneers, intrenching tools, &c., &c., enjoined upon the 9th corps, will also be made by the 5th corps.

3. As soon as it is dark, Major General Ord, commanding 18th corps, will relieve his troops in the trenches by General Mott's division of the 2d corps,

and form his corps in rear of the 9th corps, and be prepared to support the assault of Major General Burnside.

4. Every preparation will be made for moving forward the field artillery of each corps.

5. At dark, Major General Hancock, commanding 2d corps, will move from Deep Bottom to the rear of the intrenchments now held by the 18th corps, resume the command of Mott's division and be prepared at daylight to follow up the assaulting and supporting columns, or for such other operations as may be found necessary.

6. Major General Sheridan, commanding cavalry corps, will proceed at dark from the vicinity of Deep Bottom to Lee's mill, and at daylight will move with his whole corps, including Wilson's division, against the enemy's troops defending Petersburg on their right by the roads leading to that town from the southward and westward.

7. Major Duane, acting chief engineer, will have the pontoon trains parked at convenient points in the rear, prepared to move. He will see that supplies of sand-bags, gabions, fascines, &c., &c., are in depot near the lines, ready for use.

He will detail engineer officers for each corps.

8. At half past three (3½) in the morning of the 30th Major General Burnside will spring his mine, and his assaulting columns will immediately move rapidly upon the breach, seize the crest in the rear and effect a lodgment there. He will be followed by Major General Ord, who will support him on the right, directing his movement to the crest indicated, and by Major General Warren, who will support him on the left.

Upon the explosion of the mine the artillery of all kinds in battery will open upon those points of the enemy's works whose fire covers the ground over which our columns must move, care being taken to avoid impeding the progress of our troops. Special instructions respecting the direction of fire will be issued through the chief of artillery.

9. Corps commanders will report to the commanding general when their preparations are complete, and will advise him of every step in the progress of the operation and of everything important that occurs.

10. Promptitude, rapidity of execution, and cordial co-operation are essential to success, and the commanding general is confident that this indication of his expectations will insure the hearty efforts of the commanders and troops.

11. Headquarters during the operations will be at the headquarters of the 9th corps.

By command of Major General Meade.

S. WILLIAMS, *Ass't Adj't General*.

General Grant had shortly previous executed a movement on the north side of the James river, and to some extent turned the enemy's attention in that direction.

On the morning of the 30th of July the match was applied to the mine at the time designated, but it failed to explode in consequence of the defective fuse employed. The fuse supplied had been in pieces, requiring that it should be spliced. It ceased to burn at one of the points of junction. The additional precaution had been taken to lay the fuse in a train of powder, but the powder had become damp from being so long laid, some thirty or more hours, and that also failed to ignite. After waiting some time Lieutenant Jacob Douty, first lieutenant company K, and Sergeant Henry Rees, now second lieutenant company F, 48th Pennsylvania regiment, volunteered and went in the mine, ascertained the cause of the failure to explode, and relighted the fuse. The mine exploded at 4.42 a. m.

None of the witnesses seemed to be of the opinion that the delay in the explosion of the mine had any effect upon the result of the operation. The enemy,

so far as could be ascertained, did not discover any of the preparations made for a movement. No opinion was expressed as to the effect upon our troops by their being obliged to wait an hour under arms before they had an opportunity to move forward.

In the course of from five to ten minutes after the explosion of the mine the division of General Ledlie charged from our lines and entered the enemy's line at the breach made by the explosion. The explosion had made a crater from 150 to 200 feet in length, about 60 feet in width, and from 25 to 30 feet in depth, presenting a serious obstacle to the passage of troops. The organization of the division was broken, and the troops crowded into the crater and sought shelter there and for a short distance in the adjoining lines of the enemy.

The first division met with but little resistance from the enemy before they reached the mine. Soon, however, fire was opened upon them from a battery of the enemy upon the right, and one upon the left, and, before long, from a battery in their front upon Cemetery hill.

Another division was thrown in with about the same result as with the first, the troops immediately seeking shelter in the crater of the mine and the lines of the enemy adjacent thereto. The third division was thrown in with a similar result. From 150 to 200 yards of the enemy's lines on either side of the crater were occupied by our troops in that manner. By that time the enemy had recovered from the confusion into which they had been thrown by the explosion of the mine, and a heavy fire of artillery and musketry was opened upon our troops from the right, left, and front.

Several efforts were made to reorganize our troops and charge the crest of Cemetery hill, but none of them were successful.

The fourth (colored) division was also ordered to advance, and did so under a heavy fire. They succeeded in passing the white troops, already in, but in a disorganized condition. They reformed to some extent and attempted to charge the hill in front, but without success, and broke in disorder to the rear. This was about 8.45 a. m., about four hours after the explosion of the mine.

At 9.45 a. m. General Burnside received a peremptory order from General Meade to withdraw his troops. General Burnside testifies that, "Upon the reception of the order to withdraw our troops from the enemy's lines, I went to General Meade's headquarters and requested that that order might be rescinded, stating that I did not think we had fought long enough on that day, and that I thought we could succeed in carrying the crest if we persevered in the attack. He said that the order to withdraw was final, and that he had ordered all offensive operations on the right and left to cease."

General Meade testifies, "He (General Burnside) was directed about ten or eleven o'clock to withdraw. The first order sent to him was a distinct order to withdraw. General Burnside came to the position where I was with General Grant, at the headquarters on the field, and stated that, in his judgment, it would be injudicious to withdraw at that moment—that it would cause great sacrifice of life. I immediately authorized him, in writing, to exercise his judgment in the withdrawal—to remain there as long as he deemed it necessary for the secure withdrawal of his command—stating that he could remain there, if he chose, until night."

The troops were withdrawn between one and two o'clock in considerable confusion, caused by an assault of the enemy, and returned to the lines they had occupied in the morning.

The details of the charge and of the several movements of the different bodies of troops are given in the testimony. The loss sustained by our troops was between four and five thousand in killed, wounded, and missing. No troops took part in the assault except those of the 9th corps and a brigade of the 18th corps. The only part taken in the operation by the 2d corps, on the right, and the 5th corps, on the left, was to employ their artillery, which had the effect of silencing the most of the enemy's batteries, but not all.

Your committee cannot, from all the testimony, avoid the conclusion that the first and great cause of disaster was the change made on the afternoon preceding the attack, in the arrangement of General Burnside to place the division of colored troops in the advance. The reasons assigned by General Burnside for not taking one of his divisions of white troops for that purpose are fully justified by the result of the attack. Their previous arduous labors, and peculiar position, exposed continually to the enemy's fire, had, as it were, trained them in the habit of seeking shelter; and, true to that training, they sought shelter the first opportunity that presented itself after leaving our lines. And it is but reasonable to suppose that the immediate commander of a corps is better acquainted with the condition and efficiency of particular divisions of his corps than a general further removed from them.

The conduct of the colored troops, when they were put into action, would seem to fully justify the confidence that General Burnside reposed in them. And General Grant himself, in his testimony, expresses his belief that if they had been placed in the advance, as General Burnside desired, the assault would have been successful, although at the time the colored troops were ordered in the white troops already in were in confusion and had failed in the assault upon the crest beyond the crater, and the fire of the enemy had become exceedingly destructive. The colored troops advanced in good order, passed through the enemy's lines and beyond our disorganized troops there, and, stopping but a short time to reform, made the charge as directed. But the fire of the enemy was too strong, and some other of our troops hurrying back through their lines, they were thrown into confusion and forced to retire.

The same reasons which, in the opinion of your committee, can be urged in favor of the selection for the advance which General Burnside made in his first plan, viz., his opportunity, from more intimate connexion with the troops of his corps, of judging correctly which division was best fitted for that purpose, can also be urged against the mode of selection resorted to by him when compelled by the order of his commanding general to select another division to lead the assault. It may have been that, from the same causes, each of the three divisions of white troops had become, from the training of the previous forty days, unfitted for that duty. But the practice of leaving the selection of troops for an important undertaking to be determined by chance is one that does not commend itself to the judgment of your committee. It, however, is but just to General Burnside that the reasons which led him to resort to that mode of selection should be stated. His testimony is as follows:

"These three commanders (Generals Potter, Wilcox, and Ledlie) of the white divisions were then informed of the change in the plan, and also that one of their divisions must lead the assault. Considerable conversation occurred as to the condition of the different divisions, I said to them, 'There is a reason why either General Wilcox's or General Potter's division should lead the assault, and that is that they are nearer to the point of assault, and it would require less time to get them into position for the work. But there is also a reason why General Ledlie's division should lead, which is that his men have not been in such close proximity to the enemy as those of the other two divisions, and in fact have not had to do quite as hard work for the last thirty or forty days.' Each of the division commanders, as well as every officer in the command, who had given his attention to the subject in the least degree, was fully aware of the condition of the white troops, as I had previously stated it to General Meade, and was firmly impressed with the conviction that the colored troops were in much better condition to lead the attack, and of the wisdom of using the white troops as supports. There was no time to be lost, however, as the hour for springing the mine had been fixed for half-past three o'clock the next morning, and it was now after noon. I finally decided that I would allow the leading division to be designated by lot, which was done. General Ledlie drew the lot to lead the advance,

and the necessary orders were given for the movement of his division to the point from which the attack was to be made."

The order of attack as proposed by Gen. Burnside was also changed by direction of General Meade, with the approval of General Grant. Instead of moving down to the right and left of the crater of the mine for the purpose of driving the enemy from their lines in those directions, and thus removing to that extent the danger of flank attacks by the enemy upon our advancing columns, General Meade directed that the troops should push at once for the crest of Cemetery hill. General Burnside also contemplated co-operative movements by troops on the right and left of his corps. Orders were given to General Warren to make a movement from his position if he deemed it advisable, but he reported that the enemy were in too strong force, and no movement was made. On the right, occupied by a portion of General Hancock's force, the same condition of things existed, and also a smaller force of our troops than were on the left. The enemy not being driven from their lines on either side of the mine, except for a short distance in consequence of the explosion of the mine, and the efforts of our troops to obtain shelter from the fire of the enemy, they organized attacking columns which finally succeeded in driving our forces from the position they had gained.

It will be seen from the testimony that when the order to withdraw was given by General Meade, against the representations made by General Burnside, orders were also given by General Meade for offensive operations to cease on the right and left of General Burnside's position, and General Ord's troops were at the same time withdrawn from the position where they had been placed in support of the ninth corps. The enemy were thus left entirely free to make such dispositions as they chose against the force of General Burnside within their lines. General Burnside's testimony upon this point is as follows:

"Upon the reception of the order to withdraw our troops from the enemy's lines, I went to General Meade's headquarters, and requested that the order might be rescinded, stating that I did not think we had fought long enough, and that I thought we could succeed in carrying the crest if we persevered in the attack, and the other troops were put in. He said that the order to withdraw was final, and that he had ordered all offensive operations on the right and left to cease. This order, I consider, materially affected the result of our withdrawal, inasmuch as the enemy's forces upon our right and left were entirely unoccupied, and thereby had an opportunity of concentrating upon us during the withdrawal. It could hardly have been expected that the withdrawal could have been made without disaster after all offensive operations had ceased on the right and left, and the supporting force withdrawn from the rear. My only hope was that the force in the crater would be able to hold the position until a covered way could be dug from our advanced line out to the crater, a distance of a little over a hundred yards. This covered way had been commenced both in the crater, and on our advanced line, and I instructed General Ferrero to push it forward as rapidly as possible, with such of his troops as had been driven back and collected in the advanced line. The communication between the advanced line and the crater was almost entirely cut off; and although the distance was so short, only about a hundred yards, it was next to an impossibility for messengers to reach the crater, much less to send in ammunition and water. The men had become very much exhausted with the heat and labors of the day.

"After I was informed by General Meade that the order was final to withdraw, and that there was no object in holding the crater by connecting its flanks with our old advanced lines, as I had suggested, I telegraphed to General White, my chief of staff, whom I had left at my field headquarters, that the orders to withdraw were peremptory; and I at once sent for the division commanders in order to consult as to the most favorable method and time for with-

drawal. In the mean time my despatch to General White had been sent to the division commanders, and by them sent in to the crater for report from the brigade commanders. Previous to and during this time the enemy made several assaults upon our position, which were repulsed. Soon after this a heavy attack was made upon the left of our forces, driving us back, and causing a hasty evacuation of the crater, by all who could get back to the main line."

It will also be seen from the testimony that General Meade claims that his orders in relation to levelling the parapets and removing the abattis of our line, so as to afford a sufficient *debonche* for our assaulting forces, were not carried out so fully as they should have been. General Burnside claims that those orders were carried out as fully as he could do so, without affording the enemy an opportunity to discover, prematurely, the movement in which he was engaged. As it appears, beyond all question, that more troops passed from our lines into those of the enemy than, under the circumstances, could be profitably managed or employed there, your committee do not regard that matter as having any important bearing upon the subject of their inquiry.

Your committee would also call attention to the fact that General Grant attributes the disastrous result of that assault, to a greater or less extent, to the troops being sent in unaccompanied by any of the division commanders. How far the division commanders would have been able, by their presence, to overcome the confusion and disorganization into which the troops were thrown, from the causes heretofore referred to, your committee are unable to say. None of the witnesses examined previous to General Grant made any reference to that fact. It was first brought to the notice of the committee near the close of their investigation, when they were unable to direct their attention to that particular point. They refer to it here, however, as the opinion of the highest officer in our service, and also because they deem everything relating to this most disastrous affair worthy of consideration.

Your committee desire to say that, in the statement of facts and conclusions which they present in their report, they wish to be distinctly understood as in no degree censuring the conduct of the troops engaged in this assault. While they confidently believe that the selection of the division of colored troops by General Burnside to lead the assault was, under the circumstances, the best that could have been made, they do not intend thereby to have it inferred that the white troops of the 9th corps are behind any troops in the service in those qualities which have placed our volunteer troops before the world as equal, if not superior, to any known to modern warfare. The services performed by the 9th corps on many a well-fought battle-field, not only in this campaign but in others, have been such as to prove that they are second to none in the service. Your committee believe that any other troops exposed to the same influences, under the same circumstances, and for the same length of time, would have been similarly affected. No one, upon a careful consideration of all the circumstances, can be surprised that those influences should have produced the effects they did upon them.

In conclusion they, your committee, must say that, in their opinion, the cause of the disastrous result of the assault of the 30th of July last is mainly attributable to the fact that the plans and suggestions of the general who had devoted his attention for so long a time to the subject, who had carried out to a successful completion the project of mining the enemy's works, and who had carefully selected and drilled his troops for the purpose of securing whatever advantages might be attainable from the explosion of the mine, should have been so entirely disregarded by a general who had evinced no faith in the successful prosecution of that work, had aided it by no countenance or open approval, and had assumed the entire direction and control only when it was completed, and the time had come for reaping any advantages that might be derived from it.

Respectfully submitted :

B. F. WADE, *Chairman.*

TESTIMONY.

WASHINGTON, *December 17, 1864.*

Major General A. E. BURNSIDE sworn and examined.

By the chairman :

Question. What is your rank and position in the army at the present time ?

Answer. I am a major general of volunteers. At present I am waiting orders.

Question. Were you in the army of the Potomac on 30th of July, 1864, at the time a mine was sprung before Petersburg ?

Answer. Yes, sir ; I was in command of the 9th army corps, which made the assault on that occasion.

Question. Will you please give us, in your own way, a statement of such facts in connexion with that attack as you may consider important ?

Answer. In the attack upon the enemy's lines, on the 16th, 17th, and 18th of June, the 9th corps gained an advanced position beyond a deep cut in the railroad, which was but a little more than a hundred yards from the enemy's lines. Just in rear of this advanced position was a deep hollow where work could be carried on, entirely out of the sight of the enemy. On the 26th of June I received a letter from General Potter, stating that he was of the opinion that a mine could be run from this hollow to a point under a battery of the enemy immediately opposite our position. I understood from him that the suggestion was first made by some of the non-commissioned officers and privates of the 48th Pennsylvania regiment, which was composed almost entirely of miners from Schuylkill county, Pennsylvania. It was then communicated by the commanding officer of the regiment, Lieutenant Colonel Pleasants, to General Potter.

I wrote to General Potter, requesting him to come to my headquarters with Colonel Pleasants, or to reduce his plan to writing. That evening he and Colonel Pleasants came to my headquarters, and the matter was fully talked over. I authorized them to commence the work, and stated that I would report what had passed between us to the commanding general of the army of the Potomac, and would inform them of the result ; that no harm could occur from beginning the work, as it could be suspended if it should not be approved. I did communicate the substance of this conversation to the commanding general of the army of the Potomac, and received from him his assent, rather than his approval of the work. Other conversations were had, from time to time, with General Meade on the subject.

On the 3d day of July, General Meade sent me a letter requesting an opinion as to the probability of success of an attack upon the enemy from our front. That letter, and the correspondence resulting from it, are as follows :

“HEADQUARTERS ARMY OF THE POTOMAC,

“12 *m.*, July 3, 1864.

“The lieutenant general commanding has inquired of me whether an assault on the enemy's works is practicable and feasible at any part of the line held by this army. In order to enable me to reply to this inquiry, I desire, at you

earliest convenience, your views as to the practicability of an assault at any point in your front, to be made by the 2d and 6th corps in conjunction with yours.

"Respectfully,

"GEO. G. MEADE,
"Major General.

"Major General BURNSIDE."

"HEADQUARTERS NINTH ARMY CORPS,
"July 3, 1864.

"I have delayed answering your despatch until I could get the opinion of my division commanders, and have another reconnoissance of the lines made by one of my staff. If my opinion is required as to whether now is the best time to make an assault, it being understood that if not made the siege is to continue, I should unhesitatingly say, wait until the mine is finished.

"If the question is between making the assault now and a change of plan looking to operations in other quarters, I should unhesitatingly say, assault now. If the assault be delayed until the completion of the mine, I think we should have a more than even chance of success. If the assault be made now, I think we have a fair chance of success, provided my corps can make the attack, and it is left to me to say when and how the other two corps shall come in to my support.

"I have the honor to be, general, very respectfully, your obedient servant,

"A. E. BURNSIDE,
"Major General Commanding 9th Corps.

"Major General MEADE,
"Commanding Army of the Potomac."

It would seem that the language I employed in my letter was unfortunate, for it was entirely misunderstood, as will appear from the reply of General Meade, of the same date, as follows:

"HEADQUARTERS ARMY OF THE POTOMAC,
"July 3, 1864.

"GENERAL: Your note by Major Lydig has been received. As you are of the opinion there is a reasonable degree of probability of success from an assault on your front, I shall so report to the lieutenant general commanding, and await his instructions.

"The recent operations in your front, as you are aware, though sanctioned by me, did not originate in any orders from these headquarters. Should it, however, be determined to employ the army under my command in offensive operations on your front, I shall exercise the prerogative of my position to control and direct the same, receiving gladly at all times such suggestions as you may think proper to make. I consider these remarks necessary in consequence of certain conditions which you have thought proper to attach to your opinion, acceding to which in advance would not, in my judgment, be consistent with my position as commanding general of this army. I have accordingly directed Major Duane, chief engineer, and Brigadier General Hunt, chief of artillery, to make an examination of your lines, and to confer with you as to the operations to be carried on, the running of the mine now in progress, and the posting of artillery. It is advisable as many guns as possible, bearing on the point to be assaulted, should be placed in position.

"I agree with you in opinion that the assault should be deferred till the mine is completed, provided that can be done within a reasonably short period—say a week. Roads should be opened to the rear to facilitate the movements of the

other corps sent to take part in the action, and all the preliminary arrangements possible should be made. Upon the reports of my engineer and artillery officers the necessary orders will be given.

"Respectfully, yours,

"GEO. G. MEADE,
"Major General Commanding.

"Major General BURNSIDE,
"Commanding 9th Corps."

The next day I replied as follows :

"HEADQUARTERS 9TH ARMY CORPS,
"July 4, 1864.

"GENERAL: I have the honor to acknowledge the receipt of your letter of last evening, and am very sorry that I should have been so unfortunate in expressing myself in my letter. It was written in haste, just after receiving the necessary data upon which to strengthen an opinion already pretty well formed. I assure you, in all candor, that I never dreamed of implying any lack of confidence in your ability to do all that is necessary in any grand movement which may be undertaken by your army. Were you to personally direct an attack from my front I would feel the utmost confidence; and were I called upon to support an attack from the front of the 2d or 6th corps, directed by yourself, or by either of the commanders of those corps, I would do it with confidence and cheerfulness.

"It is hardly necessary for me to say that I have had the utmost faith in your ability to handle troops ever since my acquaintance with you in the army of the Potomac, and certainly accord to you a much higher position in the art of war than I possess; and I, at the same time, entertain the greatest respect for the skill of the two gentlemen commanding the 2d and 6th corps; so that my duty to my country, to you, and to myself, forbids that I should for a moment, assume to embarrass you, or them, by an assumption of position or authority. I simply desired to ask the privilege of calling upon them for support at such times, and at such points, as I thought advisable. I would gladly accord to either of them the same support, and would be glad to have either of them lead the attack; but it would have been obviously improper for me to have suggested that any other corps than my own should make the attack in my front. What I asked, in reference to calling upon the other corps for support, is only what I have been called upon to do, and have cheerfully done myself, in regard to other corps commanders.

"If a copy of my letter has been forwarded to the general-in-chief, which I take for granted has been done, that he may possess my full opinion, it may make the same impression upon him as upon yourself, and I beg that you will correct it; in fact, I beg that such impression may be, as far as possible, removed wherever it has made a lodgment. My desire is to support you, and in doing that I am serving the country.

"With ordinary good fortune we can pretty safely promise to finish the mine in a week; I hope in less time.

"I have the honor to be, general, very respectfully, your obedient servant,
"A. E. BURNSIDE,

"Major General, Commanding 9th Army Corps.

"Major General MEADE,
"Commanding Army of the Potomac."

To which letter General Meade replied as follows :

"HEADQUARTERS ARMY OF THE POTOMAC,

"July 4, 1864.

"GENERAL: Your letter of this date is received. I am glad to find that there was no intention on your part to ask for any more authority and command than you have a perfect right to expect under existing circumstances. I did not infer from your letter that you had any want of confidence in me. I rather thought you were anticipating interference from others, and thought it best to reply as I did.

"Your letter has not been shown to any one, nor forwarded to the general-in-chief, and my answer has only been seen by the confidential clerk who copied it. I am very grateful to you for your good opinion, as expressed, and shall earnestly try to merit its continuance. In the trying position I am placed in, hardly to be appreciated by any one not in my place, it is my great desire to be on terms of harmony and good feeling with all, superiors and subordinates; and I try to adjust the little jars that will always exist in large bodies to the satisfaction of each one. I have no doubt, by frankness and full explanations, such as have now taken place between us, all misapprehensions will be removed. You may rest assured, all the respect due to your rank and position will be paid you while under my command.

"Truly yours,

"GEORGE G. MEADE,

"Major General."

This correspondence is presented for the purpose of showing the views of General Meade in reference to putting into action the support on the flanks and in the rear, and also to show that I had no authority whatever to order in any of the supports.

Nothing of importance occurred in reference to the contemplated attack for several days after this correspondence took place. I had frequent conversations with General Meade in reference to the condition of the command, its position on the line, &c.

The 4th division of the ninth corps, under command of General Ferrero, composed entirely of colored troops, had been detached, at the beginning of the campaign, from my immediate command, and had received orders directly from General Grant's and General Meade's headquarters, up to the crossing of the James river.

During the month of July it was at intervals under my command, and I had made up my mind, in case an assault was to be made by the 9th corps, to put this division in the advance. I had so informed General Ferrero, and, at my suggestion, he submitted to me an opinion as to the formation which would be the most effective in passing over the ground in our front; which formation, after some consideration, I approved, and directed him to drill his troops with a view of making the attack in that way.

This first conversation must have been some three weeks before the attack was made, on the 30th of July.

The work on the mine was prosecuted with as much rapidity as possible, but it took a longer time to complete it than was at first supposed. Many obstacles were encountered, all of which, however, were finally overcome. There was, besides these natural obstacles, a considerable degree of personal discouragement during the prosecution of the work. Prominent officers expressed their fears that a mine of that length could not be successfully run, and particularly by the plan which Colonel Pleasants had adopted, that of simply relying upon the tenacity of the earth to keep the gallery intact, instead of putting up continuous supports along its whole length. His plan, however, succeeded,

and the mine was finished not far from the 20th of July. I have not the means in my possession at this time of determining the exact date of its completion.

When completed, the fact was reported to General Meade, after which considerable discussion took place in reference to the charge that was necessary to explode the mine. In my opinion it should have been a charge of 12,000 pounds of powder, and I so expressed myself. It was finally decided that the charge should be 8,000 pounds. I do not mention this as anything material, but it happens to be a fact.

The enemy's works were blown up with the 8,000 pounds, but the declivity of the crater would not have been so great had it been done with 12,000.

On the 26th of July, I think, General Meade called upon me, through his chief of staff, for a detailed statement of my plan of attack from my front. I sent him the following communication:

"HEADQUARTERS 9TH ARMY CORPS,

"July 26, 1864.

"I have the honor to acknowledge the receipt of your notes of this morning by Captains Jay and Bache; also a telegram from the commanding general, relating to the same subject.

"It is altogether probable that the enemy are cognizant of the fact that we are mining, because it is mentioned in their papers, and they have been heard at work on what are supposed to be shafts in close proximity to our galleries.

"But the rain of night before last has no doubt much retarded their work. We have heard no sound of workmen in them either yesterday or to-day, and nothing is heard by us in the mine but the ordinary sounds of work on the surface above. This morning we had some apprehension that the left lateral gallery was in danger of caving in from the weight of the batteries above it, and the shock of their firing. But all possible precautions have been taken to strengthen it, and we hope to preserve it intact.

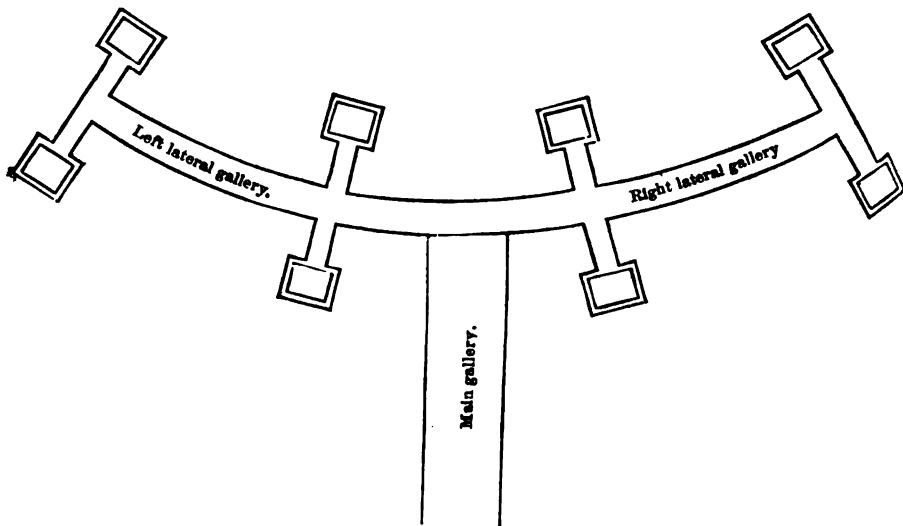
"The placing of the charges in the mine will not involve the necessity of making a noise. It is therefore probable that we will escape discovery if the mine is to be used within two or three days. It is nevertheless highly important, in my opinion, that the mine should be exploded at the earliest possible moment consistent with the general interests of the campaign. I state to you the facts as nearly as I can, and, in the absence of any knowledge as to the meditated movements of the army, I must leave you to judge of the proper time to make use of the mine. But it may not be improper for me to say that the advantages reaped from the work would be but small if it were exploded without any co-operative movement.

"My plan would be to explode the mine just before daylight in the morning, or at about five o'clock in the afternoon; mass the two brigades of the colored division in rear of my first line in columns of division 'double columns closed in mass,' 'the head of each brigade resting on the front line,' and, as soon as the explosion has taken place, move them forward with instructions for the division to take half distance, and as soon as the leading regiments of the two brigades pass through the gap in the enemy's line, the leading regiment of the right brigade to come into line perpendicular to the enemy's line by the 'right companies on the right into line, wheel,' the 'left companies on the right into line,' and proceed at once down the line of the enemy's works as rapidly as possible; and the leading regiment of the left brigade to execute the reverse movement to the left, moving up the enemy's line. The remainder of the columns to move directly towards the crest in front as rapidly as possible, diverging in such a way as to enable them to deploy into columns of regiment, the right column making as nearly as possible for Cemetery hill. These columns to be followed by the other divisions of the other corps as soon as they can be thrown in.

"This would involve the necessity of relieving these divisions by other troops

before the movement, and of holding columns of other troops in readiness to take our place on the crest in case we gain it, and sweep down it. It would, in my opinion, be advisable, if we succeed in gaining the crest, to throw the colored division right into the town. There is a necessity for the co-operation, at least in the way of artillery, by the troops on our right and left. Of the extent of this you will necessarily be the judge. I think our chances of success in a plan of this kind are more than even.

"The main gallery of the mine is 522 feet in length; the side galleries about forty feet each. My suggestion is that eight magazines be placed in the lateral galleries, two at each end, say a few feet apart in branches at right angles to the side gallery, and two more in each of the side galleries, similarly placed by pairs situated equi-distant from each other and the end of the galleries, thus:



tamp, beginning at the termination of the main gallery, say one hundred feet, leaving all the air space in the side galleries. Run out some five or six fuses, and two wires, to render the ignition of the charge certain.

"I propose to put in each of the eight magazines from 1,200 to 1,400 pounds of powder, the magazines to be connected by a trough of powder, instead of a fuse.

"I beg to enclose a copy of a statement from General Potter on the subject.

"I would suggest that the powder train be parked in a woods near our ammunition train, about a mile in rear of this place. Lieutenant Colonel Pierce, chief quartermaster, will furnish Captain Strang with a guide to the place. I beg also to request that General Benham be instructed to send us at once eight thousand sand-bags, to be used for tamping and other purposes.

"A. E. BURNSIDE,

"Major General."

"Major General HUMPHREYS,

"Chief of Staff."

On Thursday, the 28th, when I called upon General Meade, at his headquarters, he informed me that that portion of my plan which contemplated putting the colored troops in the advance did not meet with his approval; and also, that

he did not approve of the formation proposed, because he was satisfied that we would not be able, in the face of the enemy, to make the movements which I contemplated, to the right and left; and that he was of the opinion that the troops should move directly to the crest without attempting these side movements.

A long conversation ensued, in which I pointed out to General Meade the condition of the three white divisions, and urged upon him the importance, in my opinion, of placing the colored division in the advance, because I thought it would make a better charge at that time than either of the white divisions. I reminded him of the fact that the three white divisions had for forty days been in the trenches in the immediate presence of the enemy, and at no point of the line could a man raise his head above the parapet without being fired at by the enemy. That they had been in the habit, during the whole of that time, of approaching the main line by covered ways, and using every possible means of protecting themselves from the fire of the enemy. That their losses had been continuous during that time, amounting to from thirty to sixty men daily. That the men had had no opportunity of cooking upon the main line—everything having been cooked in the rear, and carried up to them. That they had had very few, if any, opportunities of washing; and that in my opinion they were not in condition to make a vigorous charge. I also stated that I was fortified in this opinion, which had been formed from personal observation, by the report of my inspector general, who had taken occasion to look at the troops with a view to making up his mind as to their effectiveness for a work of that kind.

General Meade still insisted that the black troops should not lead; that the could not trust them, because they were untried, and probably gave other reasons which do not occur to me at this moment. But he said that, inasmuch as I was so urgent in the matter, he would refer it to General Grant, whom he expected to visit that afternoon, and his decision of course would be final. I said to him that I would cheerfully abide by any decision that either one of them would make, but I must still urge upon him that I thought it of the utmost importance that the colored troops should lead:

General Meade did go to see General Grant that day, and I think returned the same afternoon, but I did not hear from him. During the next forenoon, Friday, General Willcox and General Potter, commanding two of my white divisions, came to my headquarters to talk over the attack which it was understood would be made the next morning. I told them I had been very much exercised the day before lest that portion of my plan which contemplated putting the colored division in advance should be changed by General Meade, but that I was pretty well satisfied he had given it up, because I had heard nothing further from him about it.

While in the midst of this conversation, or very soon after, General Meade came to my headquarters, and there told me that General Grant agreed with him as to the disposition of the troops, and that I would not be allowed to put the colored division in the advance. I asked him if that decision could not be reconsidered; he replied, "No, general, the order is final; you must detail one of your white divisions to take the advance." I said, "Very well, general, I will carry out this plan to the best of my ability."

I at once sent for my other division commander, General Ledlie. These three commanders of the white divisions were then informed of the changes in the plan, and also that one of their divisions must lead the assault. Considerable conversation occurred as to the condition of the different divisions; I said to them, "There is a reason why either General Willcox's or General Potter's division should lead the assault, and that is, that they are nearer to the point of assault, and it would require less time to get them into position for the work. But there is also a reason why General Ledlie's division should lead, which is, that his men have not been in such close proximity to the enemy as those of the other two

divisions, and in fact have not had to do quite as hard work for the last thirty or forty days." Each of the division commanders, as well as every officer in the command, who had given his attention to the subject in the least degree, was fully aware of the condition of the white troops, as I had previously stated it to General Meade, and were firmly impressed with the conviction that the colored troops were in much better condition to lead the attack, and of the wisdom of using the white troops as supports. There was no time to be lost, however, as the hour for springing the mine had been fixed for half-past three o'clock the next morning, and it was now afternoon. I finally decided that I would allow the leading division to be designated by lot, which was done; General Ledlie drew the lot to lead the advance, and the necessary orders were given for the movement of his division to the point from which the attack was to be made.

General Ferrero, who commanded the colored division, had, with his officers, already examined the ground upon which he was to form, and had made a reconnoissance of the ground over which he was to pass at the time he expected to lead the attack. I sent General Ledlie with his brigade officers to make similar reconnoissances, which they did. At about four o'clock in the afternoon they reported to me that the examination had been made, and they only waited for darkness, and troops to relieve them, in order to get the division in position for the attack.

General Meade issued his battle order, a copy of which I have not with me, but which can no doubt be obtained very easily by the committee, either from the headquarters of the army of the Potomac or from the Adjutant General's office.

General Ord was to send troops to relieve my troops from their position on the line, in order that we might make the concentration for the assault. Much delay occurred that night in making these changes, in consequence of the difficulty of moving large bodies of troops at night, and from the fact that the officers of General Ord's command were not acquainted with the positions of our different divisions, although they had by personal reconnoissance informed themselves as well as possible, with the short notice they had.

The mine was charged as was designated by the plan, except in amount of powder. The fuse material was not furnished in sufficient quantity to run three or four separate fuses, as was contemplated by the plan. In fact, we had but material enough to run one line of fuse, and that material came to us in small pieces of from ten to fifteen feet in length, and had to be spliced before it was laid.

The troops were in position in time for the assault. I issued orders to govern the different division commanders in the attack, and also sent them copies of the battle order of General Meade. One of the directions in the order of General Meade was "to level the breastworks and to remove the abattis before the explosion, so the troops could pass quickly to the front." This part of the order was necessarily inoperative, because of lack of time and the close proximity to the enemy, the latter of which rendered it impossible to remove the abattis from the front of our line without attracting, not only a heavy fire of the enemy, but also his attention to that point, and letting him know exactly what we were doing. But as far as was possible that portion of the order was carried out. It was afterwards found that the abattis which had to be removed when our troops did advance did not delay them more than five minutes.

General Meade made his headquarters for the day at my permanent headquarters, and I moved mine to what is called the "fourteen-gun battery," now known as Fort Morton, on the crest, just in rear of our main line some forty or fifty yards. A telegraph was run to my new headquarters from my old headquarters, where General Meade was stationed.

Directions were given to fire the mine at the time designated by General Meade. There was considerable delay in the explosion, which caused great uneasiness to all of us. General Meade sent several despatches to me during

this delay to know the cause of it. I could give him no information on the subject, was quite as anxious about the delay as he was, and sent staff officers to ascertain the cause of it. I am of the opinion that to some of the messages which General Meade sent me during that time no answers were returned, because no satisfactory answers could be given.

It will be readily understood that the cause of the delay was not easy to be ascertained, because the fuse had been lighted, and a man going into the gallery to ascertain whether or not it was still burning would, in case of explosion, necessarily lose his life.

However, a commissioned and a non-commissioned officer of the 48th Pennsylvania regiment volunteered to go into the gallery. They ascertained that the fuse had died out about a hundred feet from the mouth of the main gallery. This was a thing that would not have occurred had we had material enough to have laid four or five fuses; and I do not think it would have occurred had the fuse been continuous, or in but two or three pieces, instead of being, as it was, in so many pieces. It died out at one of the points of contact, where two of the pieces had been spliced together, either by the failure to put in powder, or by the powder becoming damp, or for some other reason which I do not myself know.

The fuse was relighted by those men, and Colonel Pleasants, who was in charge of the mine, informed me that the explosion would take place in eleven minutes from the time the information was given to Major Van Buren, my aide-de-camp. I immediately directed the major to give the information to General Meade's aid, Captain Jay, but I suppose before it reached him (General Meade) the mine exploded.

The leading division moved forward, passed over our own lines, and passed into the crater which was made by the explosion of the mine.

I will here submit a copy of the report which I made to General Meade of the operations of the 30th of July, as it will probably give a more accurate statement of what occurred on that day than I can now give from memory. The report is as follows:

**"HEADQUARTERS NINTH ARMY CORPS,
Before Petersburg, Va., August 13, 1864.**

"GENERAL: I have the honor to submit the following report of the operations of this corps in the engagement of July 30th last.

"It will be necessary to advert to the preliminary operation of running a mine under the enemy's works. This project was proposed by Lieutenant Colonel Henry Pleasants, of the 48th Pennsylvania volunteers, to General Potter, who submitted the proposal to me soon after our sitting down before that place. It met my hearty consent and support. It was commenced June 25th, (twenty-fifth,) prosecuted with great zeal through a difficult soil, sometimes of the nature of quicksand, at others a heavy marl, and with no tools but the ordinary intrenching spade and pick. The main gallery was finished July 17th, 522 feet in length. It was then found that the enemy were at work in immediate proximity, and its further prosecution was conducted with great caution. Lateral galleries 37-38 feet in length, running under and nearly parallel to the enemy's works, were completed July 23d, and the mine was ready for the charge. This, by order from the general commanding, was put in on the 27th. It consisted of about 8,000 pounds of powder. Great praise is due to Colonel Pleasants and the officers and men of his regiment for the patient labor cheerfully bestowed on a work which deserved and met complete success.

"On the 26th of July, at the request of the commanding general, I submitted a plan of assault, which contemplated the placing of the colored division of this corps in the advance, that division not being wearied by long and arduous duties

in the trenches, as were the other divisions. A certain formation of troops was also suggested. This plan was not adopted as to these two points, and the troops were put in in accordance with the orders of the commanding general.

"I received orders from the general commanding to spring the mine at 3.30 a. m. The troops were in position at that hour, massed behind the portion of our line nearest the point to be reached. The fuse, however, failed to ignite at a point where it had been spliced, and delay occurred. It was reignited, and the mine sprung at 4.45 a. m. Immediately the leading brigade of the first division, (the 2d,) under Colonel Marshall, started for the charge. There was a delay of perhaps five minutes in removing the abattis. Clearing that, the brigade advanced rapidly to the fort that had been mined, now a crater of large proportions, and an obstacle of great formidableness. Mounting a crest at least 12 feet above the level of the ground, our men found before them a huge aperture of 150 feet in length by 60 in width, and 25 to 30 in depth, the sides of loose pulverized sand, piled up precipitately, from which projected huge blocks of clay. To cross such an obstacle and preserve regimental organization was a sheer impossibility. The lines of the enemy on either side were not single, but involuted and complex, filled with pits, traverses, and bomb-proofs, forming a labyrinth as difficult of passage as the crater itself.

"After the training of the previous six weeks, it is not to be wondered at that the men should have sought shelter in these defences. Their regimental organizations were broken, and the officers undertook to reform before advancing. One regiment, the 2d Pennsylvania heavy artillery, advanced some 100 yards beyond the crater, but not supported, fell back.

"It is reported that the enemy on my left opposite the 5th corps, on the explosion of the mine, left their lines and ran to the rear. But few shots were fired from that direction on the head of my column.

"An infantry fire was opened at once from the enemy's line up to within two hundred feet of the crater; and as soon as the guns could be brought to bear, artillery was opened upon our columns from across the ravine on our immediate right, and from several works at a distance in front of the extreme right of the old line of the 9th corps.

"The 1st brigade of the 1st division immediately followed the 2d. The two filled the crater, seized part of the line of pits to the right, and began to cover themselves from the fire of the enemy's artillery, now opening from the crest in their immediate front.

"Before all of the regiments of the last brigade of the 1st division had left our line, at about 5 a. m., the 2d division commenced its advance on the right, the 2d brigade, General Griffin, leading. The distance to be traversed to reach the line of rebel works was 130 yards. The head of the column was somewhat deflected by the enemy's fire, and borne to the left, so that it struck the line near the crater, and the men of the two divisions became, in some degree, intermingled.

"Several attempts were made to advance, which resulted only in the gain of a little ground to the right. General Willcox had, meanwhile, thrown in part of a brigade to the left of the crater, the remainder halting till the 1st division should advance. Part of the 2d brigade, Colonel Bliss, (2d division,) was also thrown forward into the enemy's line. The other regiments were held until the line should be partially cleared.

"At about 6.30 a. m. orders were again sent to the division commander not to halt at the works, but to advance at once to the crest, without waiting for mutual support.

"General Potter's division (the 2d) was at that time forming for an attack on the right, but under these orders its direction was changed to the front. Its formation in front of the lines was exceedingly difficult, owing to the heavy fire from the crest and from the troops the enemy had now brought up and placed

behind the covered way in the ravine. The division charged and almost reached the summit of the hill, but unsupported, it fell back, taking shelter behind another covered way on the right.

"Meanwhile, the few regiments of that division that had not previously left our lines advanced, seizing for a considerable distance the enemy's lines on the right.

"General Willcox, on the left, found an advance impossible; his men dug from the mine two guns and held the left flank.

"Peremptory orders from the commanding general directed me to throw in all my troops and direct them against the crest. Under these orders I directed the 4th (colored) division to advance, which division I had hitherto held back, under the belief that those new troops could not be used to advantage in the crowded condition of the portion of the enemy's line held by us.

"The column was thrown forward and advanced gallantly over the slope of the crater, though by this time the ground was swept by a steady fire of artillery and infantry. A part of the column was deflected to the right and charged and captured a portion of the enemy's line with a stand of colors and some prisoners. The division, disorganized by passing the pit, crowded with men of the other divisions, then reformed as well as was possible beyond the crater, and attempted to take the hill; were met at the outset by a counter charge of the enemy, broke in disorder to the rear, passed through the crater and lines on the right, throwing into confusion and drawing off with them many of the white troops, and ran to our own lines. The enemy regained a portion of his line on the right. This was about 8.45 a. m.

"But not all of the colored troops retired; some held the pits behind which they had advanced, severely checking the enemy till they were nearly all killed.

"I believe that no raw troops could have been expected to have behaved better. Before reaching the point from which they had formed to charge, they had been shattered by the enemy's fire, broken by the exceedingly difficult passage of the enemy's lines, and disheartened by the inability of the other divisions to advance.

"At the time of the assault of the 4th division, General Willcox threw out his 2d brigade, Colonel Humphreys, and took an additional portion of the line on the left.

"Soon after the repulse, an assault from the front was made on the crater; it was gallantly repulsed with great loss to the enemy, none of them advancing to our line except those who surrendered themselves.

"At this time the enemy had planted artillery at several points on the hill, and had gained the range of the crater and lines with great accuracy, his mortar firing being especially destructive.

"At 9.15 a. m. I received with regret a peremptory order from the general commanding to withdraw my troops from the enemy's line. The order was sent into the crater at 12.20 p. m. with instructions to brigade commanders on the spot to consult and determine the hour and manner of retiring. I directed General Ferrero to immediately commence a covered way to the crater, to meet one already begun from there.

"The men in the crater and lines adjoining had become exhausted with the severity of the day's work. They had made several and repulsed three distinct assaults, and had fought hand to hand with the enemy for the possession of his pits. They were suffering severely under a hot sun from want of water.

"Finding that their position was not to be held, the generals determined, in order to save further loss of life, upon an evacuation of the lines. A message to that effect, requesting a heavy fire of infantry and artillery to right and left should be opened from the old lines, to distract the attention of the enemy, was on its way to me when another assault of the enemy was made. Seeing its preparation, and knowing their men to be discouraged by the proposed relinquishment of all the advantages gained at such cost, and disheartened that they were to expect no further support, Generals Hartraft and Griffin directed

their troops to withdraw. It is feared the order was not clearly understood in the crater, as most of the troops, and all of the wounded then lying there in great numbers, were captured.

"During the engagement the batteries of the corps did efficient service, especially in keeping down the fire of the rebel fort on the left and in annoyance of the enemy's guns on the right. Twenty-three commanders of regiments were lost on that day, four killed, fifteen wounded, and four missing; two commanders of brigades—General W. F. Bartlett and Colonel E. G. Marshall—were taken prisoners.

"In a report so hurriedly made up, it will be impossible for me to mention the many acts of heroism which characterized the action; and I will only say that my entire command, officers and men, did all that gallant men could do under the circumstances.

"To my staff—Brigadier General Julius White, chief of staff; Lieutenant Colonel Lewis Richmond, assistant adjutant general; Lieutenant Colonel C. G. Loring, jr., assistant inspector general; Surgeon John E. McDonald, medical director; Surgeon James Harris, medical inspector; Major Edward M. Neill, assistant adjutant general; Major Philip M. Lydig, assistant adjutant general; Major J. L. Van Buren, aide-de-camp; Major William Cutting, aide-de-camp; Captain W. H. Harris, U. S. A., chief of ordnance; Captain H. A. Rathbone, commissary of musters; Captain Duncan A. Pell, aide-de camp; Captain J. C. Paine, signal officer; Lieutenant D. S. Remington, acting assistant quartermaster—I must express my thanks for their activity and gallantry during the action.

"Colonel Loring, Major Cutting, and Major Van Buren were detailed to accompany divisions, and discharged their duties in the most faithful and gallant manner.

"I must again express my thanks to Colonel Pleasants and the men of his regiment for their skilful and meritorious services.

"I have the honor to be, general, very respectfully, your obedient servant,

"A. E. BURNSIDE,

"Major General, Commanding."

"Brig. Gen. S. WILLIAMS,

"Ass't Adj't General Army of the Potomac."

Question. How long after the explosion of the mine before your troops advanced to the first assault?

Answer. There was, probably, a delay of five minutes in removing the abattis, but no other delay occurred. They commenced the movement forward to the assault at once.

Question. Could you tell whether, on the explosion of the mine, the enemy abandoned any of their intrenchments to the rear of it?

Answer. There was no formidable line in rear of that one held by them at that time.

Question. What was the first effect of the explosion on the enemy, as far as you could see?

Answer. As was stated in my report, it was understood that a considerable portion, if not all of the enemy in their line in front of the fifth corps, abandoned their line temporarily.

Question. Did you deem it very essential that the troops who were to lead the advance should be trained for it somewhat before the springing of the mine?

Answer. Yes, sir; I deemed that essential. It is always better that officers commanding troops should know the work they have to do; and if the men can be drilled with a view to a specific work, they can always do that work better. I felt

at the time that my reasons for putting in the colored troops first were good, and I have had no cause to change that opinion. Although it is necessarily a matter of opinion, and no one can ever tell what the result would have been had my plan been strictly adhered to, still I am clearly of the opinion that the colored troops would have made a better charge on that day than almost any other division of the army, in consequence of the peculiar circumstances by which the army had been surrounded. They had been fighting and marching up to the time that they crossed the James river, and my corps particularly had been constantly under fire, after crossing the James, for forty days, so that a man could not raise his head above the breastworks without being shot at.

Question. And they were compelled to lie very much quiescent during that time?

Answer. Yes, sir; they had very little exercise, and that little in this constant state of suspense caused by the continuous musketry and artillery fire of the enemy.

Question. From your experience with colored troops, how would you say they compared in reliability as soldiers with the white troops, provided they have had the same training?

Answer. So far as I am myself concerned, I have the greatest faith in colored soldiers. I do not say they are fully equal to our white soldiers, because they have not the same intelligence; but they are quite as easily disciplined, and, as far as my experience goes, they stand fire quite as well as any troops we have had. And, with the exception of the intelligence which prevails to a considerable extent among our white soldiers, and which makes each man a pretty good judge of what he ought to do in a fight, I think the colored soldiers are as good soldiers as we have.

Question. To what do you attribute the failure of the 30th of July? The enterprise did fail, and I suppose you have some idea why it failed.

Answer. Well, sir, it is my opinion that the change that was made the day before the battle in the troops which were to lead the advance, and the directions which were given modifying the mode of putting the troops in, had a very serious effect upon the result. But I am not prepared to say that it would not have been a success even with those changes, had our troops on the right and left of the point assaulted attacked the enemy, and taken advantage of the weak condition of their lines. This is simply an opinion, given without reference to the action of the generals who commanded those troops, because I know nothing of their orders; and my opinion may be entirely erroneous.

By Mr. Loan :

Question. Was your assault sustained by the second corps on your right, or the fifth corps on your left?

Answer. No, sir, not to my knowledge. I do not think they attempted an attack. The 18th corps, under General Ord, had relieved my troops on that line, and a portion of that corps was held in reserve to assist us, and a brigade, or possibly a division, did make an attempt to charge the enemy's works.

By the chairman :

Question. In your judgment, was the failure of the fuse to ignite the mine on the first attempt attended with any disastrous effects?

Answer. I think not. I do not think the delay in the explosion of the mine resulted in giving the enemy any information of our movements. Therefore I do not think it resulted in any harm.

Question. Who is responsible for the deficiency in the supply of fuses necessary to explode the mine?

Answer. I was directed to make my requisitions for fuse and powder upon the chief of artillery. I did so at the proper time. A despatch from one of his

assistants came to me inquiring how much I desired, and I informed him of the distinct number of feet. I think, at any rate, I stated to him in substance that I wanted enough to run three or four fuses in to the charge.

Question. Of course you were compelled to make use of such as he sent you?

Answer. Yes, sir.

By Mr. Loan :

Question. And the quantity supplied was sufficient for only one fuse?

Answer. Yes, sir.

By the chairman :

Question. Did you have any interviews with General Meade during the battle or afterwards on that day? If so, what took place during those interviews?

Answer. I had but one personal interview with General Meade that day, and that was after the battle. Upon the reception of the order to withdraw our troops from the enemy's lines, I went to General Meade's headquarters and requested that the order might be rescinded, stating that I did not think we had fought long enough, and that I thought we could succeed in carrying the crest if we persevered in the attack, and the other troops were put in. He said that the order to withdraw was final, and that he had ordered all offensive operations on the right and left to cease. This order, I consider, materially affected the result of our withdrawal, inasmuch as the enemy's forces upon our right and left were entirely unoccupied, and thereby had an opportunity of concentrating upon us during the withdrawal. It could hardly have been expected that the withdrawal could have been made without disaster, after all offensive operations had ceased on the right and left and the supporting force withdrawn from the rear. My only hope was that the force in the crater would be able to hold the position until a covered way could be dug from our advanced line out to the crater, a distance of a little over a hundred yards. This covered way had been commenced both in the crater and on our advanced lines, and I instructed General Ferrero to push it forward as rapidly as possible, with such of his troops as had been driven back, and collected in the advanced line. The communication between the advanced line and the crater was almost entirely cut off, and although the distance was so short—only about one hundred yards—it was next to an impossibility for messengers to reach the crater, much less to send in ammunition and water. The men had become very much exhausted with the heat and labors of the day.

After I was informed by General Meade that the order was final to withdraw, and that there was no object in holding the crater by connecting its flanks with our old advanced line, as I had suggested, I telegraphed to General White, my chief of staff, whom I had left at my field headquarters, that the orders to withdraw were peremptory, and I at once sent for the division commanders, in order to consult as to the most favorable method and time for withdrawal. In the mean time, my despatch to General White had been sent to the division commanders, and by them sent into the crater for report from the brigade commanders. Previous to and during this time the enemy made several assaults upon our position, which were repulsed. Soon after this a heavy attack was made upon the left of our forces, driving us back, and causing a hasty evacuation of the crater by all who could get back to the main lines.

In the evening of that day General Meade sent me a message stating that he had understood that our troops had been driven from the crater, and he desired to know if such was the fact. I very improperly threw the message one side, and said to my staff officer, who was with me, that I would not answer such a message; that if General Meade felt disposed to cease offensive operations on the right and left, and leave us to get out of the crater as best we could, and had taken so little interest in the matter as not to know late in the evening that we had been driven from the crater before two o'clock, I certainly would not

give him the information, and that I believed he knew all about it. He sent me, I think, two more messages during the evening, which I treated in the same way.

I refer to this as a piece of insubordination on my part for which no excuse can be offered; but it had no effect upon the result, as it occurred after the fight.

An unfortunate correspondence took place between General Meade and myself, during the day, which reads as follows:

JULY 30.

General MEADE:

I am doing all in my power to push the troops forward, and, if possible, we will carry the crest. It is hard work, but we hope to accomplish it. I am fully alive to the importance of it.

A. E. BURNSIDE, *Major General.*

HEADQUARTERS ARMY OF THE POTOMAC,
7.30 a. m., 1864.

Major General BURNSIDE:

What do you mean by hard work to take the crest? I understand not a man has advanced beyond the enemy's line which you occupied immediately after exploding the mine.

Do you mean to say your officers and men will not obey your orders to advance? If not, what is the obstacle? I wish to know the truth, and desire an immediate answer.

GEO. G. MEADE,
Major General.

HEADQUARTERS NINTH ARMY CORPS,
Battery Morton, July 30, 1864.

General MEADE:

Your despatch, by Captain Jay, received. The main body of General Potter's division is beyond the crater. I do not mean to say that my officers and men will not obey my orders to advance. I mean to say that it is very hard work to advance to the crest.

I have never, in any report, said anything different from what I conceived to be the truth. Were it not insubordinate, I would say that the latter remark of your note was unofficerlike and ungentlemanly.

Respectfully yours,

A. E. BURNSIDE,
Major General.

I refer to this correspondence because it has been made the subject of charges against me upon which I was not tried. I felt, at the time I wrote the offensive despatch, that General Meade intended to imply that I had not made truthful reports, but I am now satisfied that he did not so intend.

General Meade ordered a court to investigate the operations of the 30th. This court was composed of General Hancock, who commanded the troops on my right, General Ayres, who commanded a division of troops on my left, (which division was selected for the purpose of making an attack from our left, but did not attack,) and General Miles, who commanded a brigade in General Hancock's corps, which was on my right. The judge advocate of the court was the inspector general at General Meade's headquarters.

I at once telegraphed to Mr. Stanton, as follows:

HEADQUARTERS 9TH ARMY CORPS,
August 6, 1864.

To the Secretary of War of the United States, Washington :

Whilst I have the greatest respect for the officers composing the court ordered by Special Order W. D. No. 258, to examine into the affair of the 30th instant, I beg to submit that it should be composed of officers who do not belong to this army.

Whilst I am most willing, and feel it to be my due to have the fullest investigation, I should not, under the circumstances, demand one, nor seek to press the matter to an issue in any degree adverse to the general commanding the army of the Potomac. I am ready to await the verdict of time. But if an investigation is to be had, I feel that I have a right to ask that it be made by officers not in this army, and not selected by General Meade. All of the officers constituting the court held command in the supporting columns which were not brought into action on that day. The judge advocate is a member of General Meade's staff.

General Meade has also preferred charges against me, upon which I desire to be tried.

As the court convenes on Monday, the 8th instant, I respectfully request an answer may be returned as soon as possible.

A. E. BURNSIDE,
Major General.

To this telegram I received the following reply :

"UNITED STATES MILITARY TELEGRAPH.

["By telegraph from Washington, dated August 8, 1864—11 a. m.]

"Major General BURNSIDE :

"Your telegram of the sixth (6th) has been laid before the President, who directs me to say, that, while he would like to conform to your wishes, the detail for the court of inquiry having already been ordered, he does not see that any evil can result to you. The action of the board of inquiry will be merely to collect facts for his information. No charges or even imputations have reached him or the department in respect to you. It is not known here, except by your telegram, that General Meade has made against you any charges. He directs me further to assure you that you may feel entire confidence in his fairness and justice.

"EDWIN M. STANTON,
"Secretary of War."

I stated in my evidence a few moments ago that General Meade ordered the court, which is the fact. It assembled under his order, and decided that such a court could not proceed without the authority of the President of the United States. The matter was then referred to Washington, and the existence of the court was legalized by the President. This court assembled and took its evidence, which I understand is now in the hands of the President.

There is also a point which will come up in this investigation, I suppose, inasmuch as it came up in the investigation before this military board ; that is, as to the information which was furnished by me to General Meade during the action. I have simply to say, that I reported to him all important movements, and that I did not feel at any time that any information was withheld from him which was necessary to the making up of a correct opinion as to the state of affairs in my front. I will leave with the committee a copy of all messages received from General Meade by me during the action, and of all messages sent by me to General Meade, and by some of General Meade's officers, who were with me at intervals during the day, and who reported to General Meade the progress of affairs, which I considered the same as if reported myself.

Question. What reason did General Meade give for not having the attack made on the right and left, as you had suggested?

Answer. He never gave me any reasons. We never conversed upon the subject.

Question. An attack by the corps on your right and left was contemplated in the plan that you first submitted to him?

Answer. Yes, sir; and in the despatches, just referred to, will be found one from me to General Meade, requesting that General Warren's corps should be put in. I first sent him a despatch, taking as much responsibility as I thought I could, in view of his letter of the 3d of July, stating that if Warren's men could be concentrated, and I could designate the time when they could go in, I would let him know, making it a half request. Afterwards, becoming anxious, I sent him a despatch embracing these words: "Now is the time for Warren to go in." Notwithstanding the fact of his letter of the 3d of July, I thought I would take the responsibility of sending this despatch to him, and I did so.

By Mr. Chandler:

Question. As I understand it, the enemy's lines were very much weakened on their right and left at the time of the explosion of the mine?

Answer. Yes, sir. As I was informed by my signal officer, they took troops from in front of General Warren's corps, formed them in columns, and marched them around and assaulted our men who were trying to take the crest; but he did not report having seen any troops taken from their left opposite General Hancock's corps.

By the chairman:

Question. In your opinion, were there any other of our troops engaged that day, excepting those who were trying to advance through the crater?

Answer. No, sir.

Question. Did not that fact enable the enemy to concentrate a greater force upon those who were advancing than they could have done had they been vigorously attacked at other points of their lines?

Answer. There is scarcely a doubt of it.

Question. Do you know any reason why those other troops along our lines were not ordered to engage the enemy at the time you were endeavoring to penetrate beyond the crater?

Answer. No, sir; I do not know of any reason, and I do not know of any orders issued on that day, except those concerning my own command.

The following are the despatches from General Meade:

No. 1.] UNITED STATES MILITARY TELEGRAPH,
Headquarters Army of the Potomac, July 30, 1864—3.20 a. m.

Major General BURNSIDE: As it is still so dark, the commanding general says you can postpone firing the mine, if you think it proper.

A. A. HUMPHREYS,
Major General, Chief of Staff.

This despatch was answered either by a written or verbal message from me, stating that the mine would be exploded at the hour designated—3.30 a. m.

No. 2.] UNITED STATES MILITARY TELEGRAPH,
Headquarters Ninth Army Corps, July 30, 1864—4.30 a. m.

Major General BURNSIDE: Is there any difficulty in exploding the mine? It is three-fourths of an hour later than that fixed upon for exploding.

A. A. HUMPHREYS,
Major General and Chief of Staff.

It is possible I did not answer this despatch, as I was at the time anxiously endeavoring to ascertain the cause of the delay in the explosion.

No. 3.]

UNITED STATES MILITARY TELEGRAPH,
Headquarters Ninth Army Corps, July 30, 1864—4.30 a. m.

Major General BURNSIDE: If the mine cannot be exploded, something else must be done, and at once. The commanding general is awaiting to hear from you before determining.

A. A. HUMPHREYS,
Major General and Chief of Staff.

The cause of the delay had not been ascertained when I received this despatch.

No. 4.]

UNITED STATES MILITARY TELEGRAPH,
Headquarters Ninth Corps, July 30, 1864—4.35 a. m.

General BURNSIDE: The commanding general directs, if your mine has failed that you make an assault at once, opening your batteries.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Just as I received this despatch Major Van Buren reported the cause of the delay, and I directed him to inform General Meade's aid (who was waiting) of the cause. Very soon after the mine exploded.

No. 5.]

UNITED STATES MILITARY TELEGRAPH;
Headquarters Army of the Potomac, July 30, 1864—5.40 a. m.

General BURNSIDE: The general commanding learns that your troops are halting at the works where the mine exploded, and he directs that all your troops be pushed forward to the crest at once. Call on General Ord to move forward his troops at once.

A. A. HUMPHREYS,
Major General and Chief of Staff.

This was simply an order, and required no answer.

No. 6.]

UNITED STATES MILITARY TELEGRAPH,
Headquarters Army of the Potomac, July 30, 1864—5.40 a. m.

General BURNSIDE: What news from your assaulting column? Please report frequently.

GEO. G. MEADE,
Major General.

To this despatch I replied as follows:

HEADQUARTERS ARMY CORPS,
Battery Morton, July 30, 1864.

General MEADE: We have the enemy's first line and occupy the breach. I shall endeavor to push forward to the crest as rapidly as possible.

A. E. BURNSIDE,
Major General.

P. S.—There is a large fire in Petersburg.

W. W. SANDERS,
Captain Sixth Infantry.

UNITED STATES MILITARY TELEGRAPH,
Headquarters Army Potomac, 6 a. m., July 30, 1864.

Major General BURNSIDE,
Commanding 9th Corps :

The commanding general wishes to know what is going on on your left, and whether it would be an advantage for Warren's supporting force to go in at once.

A. A. HUMPHREYS,
Major General and Chief of Staff.

This was answered as follows :

General MEADE :

6.20 a. m.

If General Warren's supporting force can be concentrated just now ready to go in at the proper time, it would be well. I will designate to you when it ought to move ; there is scarcely room for it now on our immediate front.

A. E. BURNSIDE,
Major General.

UNITED STATES MILITARY TELEGRAPH,
Headquarters Army Potomac, July 30, 1864—5.30 a. m.,

Major General BURNSIDE :

Warren's force has been concentrated, and ready to move since 3.30 a. m. My object in inquiring was to ascertain if you could judge of the practicability of advancing without waiting for your column. What is the delay in your column moving ? Every minute is most precious, as the enemy are undoubtedly concentrating to meet you on the crest ; and if you give them time enough, you cannot expect to succeed. There will be no object to be gained in occupying the enemy's line ; it cannot be held under their artillery fire, without much labor in turning it. The great point is to secure the crest at once and at all hazards.

GEO. G. MEADE,
Major General.

I replied this as follows :



JULY 20, 1864.

General MEADE :

I am doing all in my power to push the troops forward, and if possible we will carry the crest. It is hard work, but we hope to accomplish it. I am fully alive to the importance of it.

A. E. BURNSIDE,
Major General.

HEADQUARTERS ARMY POTOMAC.
 7.30 a. m., July 30, 1864.

Major General BURNSIDE :

What do you mean by hard work to take the crest ? I understand not a man has advanced beyond the enemy's line which you occupied immediately after exploding the mine. Do you mean to say your officers and men will not obey your orders to advance ? If not, what is the obstacle ? I wish to know the truth, and desire an immediate answer.

GEO. G. MEADE,
Major General.

HEADQUARTERS NINTH ARMY CORPS,
Battery Morton, July 30, 1864.

General MEADE:

Your despatch per Captain Jay received. The main body of General Potter's division is beyond the crater. I do not mean to say that my officers and men will not obey my orders to advance. I mean to say that it is very hard to advance to the crest.

I have never in any report said anything different from what I conceived to be the truth. Were it not insubordinate, I should say that the latter remark of your note was unofficerlike and ungentlemanly.

Respectfully yours,

A. E. BURNSIDE,
Major General.

HEADQUARTERS ARMY OF THE POTOMAC,
7.30 a. m., 1864.

Major General BURNSIDE:

GENERAL: Will you do me the favor to send me a copy of my note to you per Captain Jay. I did not keep any copy, intending it to be confidential. Your reply requires I should have a copy.

Respectfully yours,

GEO. G. MEADE,
Major General.

This was answered by sending either a copy or the original note by the aide who brought the above despatch.

UNITED STATES MILITARY TELEGRAPH,
Headquarters Army Potomac, 8 a. m., July 30, 1864.

General BURNSIDE:

Since writing by Captain Jay, Captain Sanders has come in, and reported condition of affairs. He says Griffin has advanced and was checked. This modifies my despatch. Still I would like to know the exact morale of your corps. Ord reports that he cannot move until you get out of the way. Can't you let him pass out on your right, and let him try what he can do?

GEO. G. MEADE,
Major General.

U. S. MILITARY TELEGRAPH, BEFORE PETERSBURG,
Covered Way, Fourteen-Gun Battery, July 30, 1864.

General MEADE:

Many of the ninth and eighteenth corps are retiring before the enemy. I think now is the time to put in the 5th corps promptly.

A. E. BURNSIDE,
Major General.

UNITED STATES MILITARY TELEGRAPH,
Headquarters Army Potomac, 9 30 a. m., July 30, 1864.

Major General BURNSIDE:

The major general commanding has heard that the result of your attack has been a repulse, and directs that if in your judgment nothing further can be effected, that you withdraw to your own line, taking precaution to get your men back safely. General Ord will do the same.

A. A. HUMPHREYS,
Major General and Chief of Staff.

UNITED STATES MILITARY TELEGRAPH,
Headquarters Army Potomac, July 30, 1864.

General BURNSIDE :

The major general commanding directs that you withdraw to your own intrenchments.

A. A. HUMPHREYS,
Major General.

After the receipt of these despatches I went to General Meade's headquarters, as I before stated, to request that the orders might be rescinded.

UNITED STATES MILITARY TELEGRAPH,
Headquarters Army Potomac, July 30, 1864.

General BURNSIDE and General ORD:

You can exercise your own discretion in withdrawing your troops now, or at a later period—say to-night. It is not intended to hold the enemy's line which you now occupy any longer than is required to withdraw safely your men.

GEORGE G. MEADE,
Major General.

The despatch, I think, passed me while I was on the way to General Meade's headquarters.

Besides the despatches from me, the following were sent from my headquarters by an aide of General Meade, who was with me during the day.

HEADQUARTERS ARMY OF THE POTOMAC,
5.50 a. m., July 30, 1864.

General MEADE :

The eighteenth corps have just been ordered to push forward to the crest. The loss does not appear to be heavy; some prisoners coming in.

W. W. SANDERS,
Captain 6th Infantry.

HEADQUARTERS ARMY OF THE POTOMAC,
6.10 a. m., July 30, 1864.

Major General MEADE, *commanding:*

General Burnside says he has given orders to all his division commanders to put everything in at once.

W. W. SANDERS,
Captain 6th Infantry.

HEADQUARTERS ARMY OF THE POTOMAC,
8.45 a. m., July 30, 1864.

General MEADE :

One gun has just been taken out of the mine, and is now being put in position. Have not heard anything from the attack made from the left of the mine. One set of colors just sent in, captured by the negroes.

W. W. SANDERS,
Captain 6th Infantry.

HEADQUARTERS ARMY OF THE POTOMAC,
9 a. m., July 30, 1864.

General MEADE :

The attack made on the right of mine has been repulsed. A great many men are coming to the rear.

W. W. SANDERS,
Captain 6th Infantry.

In addition to these, General Meade received a despatch from Lieutenant Colonel Loring, my inspector general, which was intended for me, and was forwarded to me by him, (General Meade,) which assured me that he had the information contained in the despatch.

Testimony of Major General George G. Meade.

HEADQUARTERS ARMY OF THE POTOMAC,
Before Petersburg, Va., December 20, 1864.

Major General GEORGE G. MEADE sworn and examined.

By Mr. Chandler :

Question. What is your rank and position in the army ?

Answer. I am a major general of the United States army, commanding the army of the Potomac.

Question. Will you state to the committee, in your own way, whatever you may deem important in relation to the battle before Petersburg, of July 30, 1864 ?

Answer. Immediately after that action took place, I felt that it was due to the public, to the army, and to myself, that the matter should be thoroughly investigated. I therefore applied to the President of the United States, the only power having authority to order such an investigation, to order a court of inquiry, which he immediately did. That court was composed of four of the most distinguished officers of this army. Major General Hancock was the president of it, and Brigadier General Ayres, Brigadier General Miles, and some other officer, whose name I do not now recollect, were the other members of it.

That court was in session in this army within a few days after the battle. I appeared before it and submitted a full and complete statement and explanation of all the facts connected with the matter, and directed their attention to the proper persons to be called before them. They had before them all the officers who were then upon the ground, and thoroughly investigated the whole subject. Their proceedings were transmitted to the War Department, where, so far as my knowledge extends, they have been from that time to this. Of the result of those proceedings, the opinion of the court, or anything that occurred before them, excepting my own testimony, I am perfectly ignorant.

I would suggest to the committee that they call upon the War Department for a copy of those proceedings, as they will find there all the information which can possibly be obtained. And if, after an examination of those proceedings—which might be made a part of the testimony before you—any further information should be desired, it could easily be obtained by calling upon such officers as the committee might deem it advisable to examine.

At present the only documents I have with me are my official report, which I made to Lieutenant General Grant immediately after the affair, and some papers referred to in that report. Those, with the permission of the committee, I will now read and make part of my testimony. They give a general history of the transaction, but do not enter into details so much as I could do if I had all my despatches and official papers here.

HEADQUARTERS ARMY OF THE POTOMAC,
August 16, 1864.

I have the honor to submit herewith a report of the operations on the 30th ultimo, when an unsuccessful assault was made on the enemy's works in front of Petersburg. Soon after occupying our present lines, Major General Burnside, commanding 9th corps, at the suggestion of Lieutenant Colonel Pleasants,

48th Pennsylvania volunteers, commenced the running of a gallery from his line to a battery occupied by the enemy, with a view of placing a mine under this battery. When my attention was called to this work, I sanctioned its prosecution, though at the time, from the reports of the engineers and my own examination, I was satisfied the location of the mine was such that its explosion would not be likely to be followed by any important result, as the battery to be destroyed was in a re-entering part of the enemy's line, exposed to an enfilading fire, and reverse fire from points both on the right and left. The mine being completed, and the movement of the 2d corps to the north side of the James having drawn off the greater portion of the confederate army, the Lieutenant general commanding directed the explosion of the mine, and the assaulting the enemy's works. For this purpose the 18th corps was placed under my command, in addition to the army of the Potomac. On the 29th ultimo, a general order of battle was issued, a copy of which is herewith annexed, (marked A.) which will serve to show the plan of the proposed attack. On the 30th, owing to a defect in the fuse, the explosion of the mine was delayed from 3.30 to 4.45 a. m., an unfortunate delay, because it was designed to assault the crest of the ridge occupied by the enemy just before daylight, when the movement would in a measure be obscured. As soon as the mine was sprung, the 1st division 9th corps, Brigadier General Ledlie commanding, moved forward and occupied the crater without opposition. No advance, however, was made from the crater to the ridge, some 400 yards beyond; Brigadier General Ledlie giving as a reason for not pushing forward, that the enemy could occupy the crater in his rear, he seeming to forget that the rest of his corps and all the 18th corps were waiting to occupy the crater and follow him. Brigadier Generals Potter and Wilcox, commanding 2d and 3d divisions, 9th corps, advanced simultaneously with Ledlie, and endeavored to occupy parts of the enemy's line on Ledlie's right and left, so as to cover those flanks, respectively, but on reaching the enemy's line Ledlie's men were found occupying the vacated parts, both to the right and left of the crater, in consequence of which the men of the several divisions got mixed up, and a scene of disorder and confusion commenced, which seems to have continued to the end of the operations. In the mean time, the enemy rallying from the confusion incident to the explosion, began forming his infantry in a ravine to the right, and planting his artillery both on the right and left of the crater. Seeing this, Potter was enabled to get his men out of the crater and enemy's line, and had formed them for an attack on the right, when he received an order to attack the crest of the ridge. Notwithstanding he had to change front in the presence of the enemy, he succeeded not only in doing so, but, as he reports, advancing to within a few yards of the crest, which he would have taken if he had been supported. This was after 7 a. m., more than two hours after Ledlie had occupied the crater, and yet he had made no advance. He, however, states that he was forming to advance when the 4th division, (colored troops,) General Ferrero commanding, came rushing into the crater, and threw his men into confusion. The 4th division passed beyond the crater, and made an assault, when they encountered a heavy fire of artillery and infantry, which threw them into inextricable confusion, and they retired in disorder through the troops in the crater, and back into our lines. In the mean time, in ignorance of what was occurring, I sent orders to Major General Ord, commanding 18th corps, who was expected to follow the 9th, to advance at once on the right of the 9th, and independently of the latter. To this General Ord replied, the only debouches were choked up with the 9th corps, which had not all advanced at this time. He, however, pushed on a brigade of Turner's division over the 9th corps parapets, and directed it to charge the enemy's line on the right, where it was still occupied. While it was about executing this order, the disorganized 4th division (colored) of the 9th corps came rushing back and car-

rying everything with them, including Turner's brigade. By this time—between 8 and 9 a. m.—the enemy, seeing the hesitation and confusion on our part, having planted batteries on both flanks in ravines where our artillery could not reach them, opened a heavy fire, not only on the ground in front of the crater, but between it and our lines, their mortars at the same time throwing shells into the dense mass of our men in the crater and adjacent works. In addition to this artillery fire, the enemy massed his infantry and assaulted the position. Although the assault was repulsed and some heroic fighting was done, particularly on the part of Potter's division and some regiments of the 18th corps, yet the exhaustion incident to the crowding of the men and the intense heat of the weather, added to the destructive artillery fire of the enemy, produced its effect, and report was brought to me that our men were retiring into our old lines. Being satisfied the moment for success had passed, and that any further attempt would only result in useless sacrifice of life, with the concurrence of the lieutenant general commanding, who was present, I directed the suspension of further offensive movements, and the withdrawal of the troops in the crater when it could be done with security, retaining the position till night if necessary. It appears that when this order reached the crater, 12.20, the greater portion of those that had been in were out; the balance remained for an hour and a half repulsing an attack of the enemy, but on the enemy threatening a second attack, retreating in disorder, losing many prisoners. This terminated this most unfortunate and not very creditable operation. I forbear to comment in the manner I might otherwise deem myself justified in doing, because the whole subject, at my request, has been submitted for investigation by the President of the United States to a court of inquiry, with directions to report upon whom, if any one, censure is to be laid. I transmit herewith the reports of corps, division, and brigade commanders, giving the details of the operations of each corps. There are two remarks in the report of Major General Burnside which justice to myself requires I should notice. General Burnside has thought proper to state: "A plan of attack was submitted, involving the putting the colored division in advance, and a certain formation of troops, and that the plan was disapproved in these two particulars." This statement is not accurate. The proposition to place the colored division at the head of the assaulting column was disapproved, but no control was exercised over General Burnside in the tactical formation of his column. This will be seen by reference to the correspondence that passed upon the subject, marked B and C. Again, Major General Burnside says: "Peremptory orders from the commanding general directed me to throw in all my troops and direct them against the crest. Under these orders, I directed the 4th division, colored, to advance, which division I had hitherto held back, under the belief that these new troops could not be used to advantage in the crowded condition of the portion of the enemy's line held by us." I presume Major General Burnside here refers to the despatch addressed to him as follows. (See despatch of July 30, 6 a. m.)

It was not intended by that order, nor was any such construction justified by its terms, to push forward the colored division into the over-crowded crater, there to add to the disorganization and confusion already existing, and the existence of which I was utterly ignorant, but of which it is to be presumed, from the extract from his report, General Burnside was aware. The order required that the men in the crater should be pushed forward at all hazards to the crest beyond, and when they moved the colored division advanced after them. It will be seen to be the concurrent testimony of all parties that the failure of success was in a great measure due to the injudicious advance of the colored division into the over-crowded crater and adjacent parts of the enemy's line, and to the confusion produced by their retiring a disordered and disorganized mass, after attempting an assault. From the reports transmitted, I cannot perceive that the colored troops are open to any more censure for their conduct than the

other troops engaged. I enclose herewith a list of casualties, amounting in all in the army of the Potomac and 18th corps to 4,400 killed, wounded, and missing; 246 prisoners, two (2) colors and two (2) guns were captured, but the latter were abandoned on retiring from the crater.

In closing this report, I cannot forbear from expressing the poignant regret I experienced at the failure of an operation promising such brilliant results had it been successful. Had the mine been sprung at 3.30, a. m., and the crest promptly seized, as it is believed it could have been done in thirty minutes after the explosion, such a force could have been poured into the crest as to have rendered its repossession by the enemy impossible, and thus have rendered untenable all his lines around Petersburg. But the operation was essentially a coup-de-main, depending for success upon the utmost promptitude of movement, and the taking advantage of the shock produced on the enemy by the explosion of the mine. The causes of the failure justice to all parties requires I should leave to the court of inquiry to ascertain.

Very respectfully, &c.,

GEO. G. MEADE,
Major General Commanding.

Lieut. Col. T. S. BOWERS,
Assist. Adj't General.

Official:

S. WILLIAMS, *Assistant Adjutant General.*

A.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864.

ORDERS.

The following instructions are issued for the guidance of all concerned :

1. As soon as it is dark, Major General Burnside, commanding ninth corps, will withdraw his two brigades under General White, occupying the intrenchments between the plank and Norfolk roads, and bring them to his front. Care will be taken not to interfere with the troops of the eighteenth corps moving into their position in rear of the ninth corps. General Burnside will form his troops for assaulting the enemy's works at daylight of the 30th, prepare his parapets and abattis for the passage of the columns, and have the pioneers equipped for work in opening passages for artillery, destroying enemy's abattis, and the intrenching tools distributed for effecting lodgement, &c.

2. Major General Warren, commanding fifth corps, will reduce the number of his troops holding the intrenchments of his front to the minimum, and concentrate all his available force on his right, and hold them prepared to support the assault of Major General Burnside. The preparations in respect to pioneers, intrenching tools, &c., enjoined upon the ninth corps will also be made by the fifth corps.

3. As soon as it is dark Major General Ord, commanding eighteenth corps, will relieve his troops in the trenches by General Mott's division of the second corps, and form his corps in rear of the ninth corps, and be prepared to support the assault of Major General Burnside.

4. Every preparation will be made for moving forward the field artillery of each corps.

5. At dark Major General Hancock, commanding second corps, will move from Deep Bottom to the rear of the intrenchments now held by the eighteenth corps, resume the command of Mott's division, and be prepared at daylight to follow up the assaulting and supporting columns, or for such other operations as may be found necessary.

6. Major General Sheridan, commanding cavalry corps, will proceed at dark from the vicinity of Deep Bottom to Lee's mill, and at daylight will move with his whole corps, including Wilson's division, against the enemy's troops defending Petersburg on the right, by the roads leading to that town from the southward and westward.

7. Major Duane, acting chief engineer, will have the pontoon train parked at convenient points in the rear, prepared to move. He will see that supplies of sand-bags, gabions, fascines, &c., are in depot near the lines, ready for use. He will detail engineer officers for each corps.

8. At half past 3 in the morning of the 30th Major General Burnside will spring his mine, and his assaulting columns will immediately move rapidly upon the breach, seize the crest in the rear, and effect a lodgement there. He will be followed by Major General Ord, who will support him on the right, directing his movement to the crest indicated, and by Major General Warren, who will support him on the left.

Upon the explosion of the mine the artillery of all kinds in battery will open upon those points of the enemy's works whose fire covers the ground over which our columns must move, care being taken to avoid impeding the progress of our troops. Special instructions respecting the direction of fire will be issued through the chief of artillery.

9. Corps commanders will report to the commanding general when their preparations are complete, and will advise him of every step in the progress of the operation, and of everything important that occurs.

10. Promptitude, rapidity of execution, and cordial co-operation are essential to success, and the commanding general is confident that this indication of his expectations will insure the hearty efforts of the commanders and troops.

11. Headquarters during the operation will be at the headquarters of the ninth corps.

By command of Major General Meade.

S. WILLIAMS,

Assistant Adjutant General.

Official :

S. WILLIAMS, A. A. G.

B.

HEADQUARTERS NINTH ARMY CORPS,

July 26, 1864.

GENERAL: I have the honor to acknowledge the receipt of your notes of this morning by Captains Jay and Bache, also of a telegram from the commanding general relating to the same subject. It is altogether probable that the enemy are cognizant of the fact that we are mining, because it has been mentioned in their newspapers, and they have been heard to work on what are supposed to be shafts in close proximity to our galleries. But the rain of night before last no doubt filled their shafts and much retarded their work. We have heard no sounds of work in them either yesterday or to-day, and nothing is heard by us in the mine but the usual sounds of work on the surface above.

This morning we had some apprehensions that the left lateral gallery was in danger of caving in from the weight of the batteries above it and the shock of their firing. But all possible precautions have been taken to strengthen it, and we hope to preserve it intact.

The placing of the charges in the mine will not involve the necessity of making a noise. It is therefore probable that we will escape discovery if the mine is to be used within two or three days. It is nevertheless highly important, in my opinion, that the mine should be exploded at the earliest possible moment consistent with the general interests of the campaign. I state to you the facts as nearly as I can, and in the absence of any knowledge as to the meditated movements of the army I must leave you to judge the proper time to make use of the mine. But it may not be improper for me to say, that the advantages reaped from the work would be but small if it were exploded without any co-operative movement. My plan would be to explode the mine just before daylight in the morning, or about 5 o'clock in the afternoon, mass the two brigades of the colored division in rear of my first line, in column of divisions, "double columns closed in mass"--the head of each brigade resting on the front line, and as soon as the explosion has taken place move them forward with instructions for the divisions to take half distance; and as soon as the leading regiments of the two brigades pass through the gap in the enemy's line, the leading regiments of the right brigade to come into line perpendicular to the enemy's line by the right companies "on the right into line wheel," the left companies "on the right into line," and proceed at once down the line of the enemy's works as rapidly as possible; the leading regiments of the left brigade to execute the reverse movement to the left, moving up the enemy's line. The remainders of the two columns to move directly towards the crest in front as rapidly as possible, diverging in such a way as to enable them to deploy into columns of regiments, the right column making as nearly as may be for Cemetery hill. These columns to be followed by the other divisions of this corps as soon as they can be thrown in. This would involve the necessity of relieving these divisions by other troops before the movement, and of holding columns of other troops in readiness to take our place on the crest, in case we gain it, and sweep down it.

It would be advisable, in my opinion, if we succeed in gaining the crest, to throw the colored division right into the town. There is a necessity for the cooperation, at least in the way of artillery, of the troops on my right and left; of the extent of this you will necessarily be the judge. I think our chances of success in a plan of this kind are more than even.

The main gallery of the mine is five hundred and twenty-two (522) feet in length, the side galleries about forty (40) feet each. My suggestion is that eight magazines be placed in the lateral galleries—two at each end, say a few feet apart, in branches at right angles to the side galleries, and two more in each of the side galleries, similarly placed, situated by pairs equidistant from each other and the ends of the galleries, thus:

[See diagram, page 16.]

Tamping beginning at the termination of the main gallery, for, say, one hundred feet, leaving all the air space in the side galleries. Run out some five or six fuses and two wires to render the ignition of the charge certain.

I propose to put in each of the eight magazines from twelve to fourteen hundred pounds of powder, the magazines to be connected by a trough of powder instead of a fuse.

I beg to enclose a copy of a statement from General Potter on the subject. I would suggest that the powder train be parked in a wood near our ammunition train, about a mile in rear of this place; Lieutenant Colonel Pierce, chief quartermaster, will furnish Captain Strang with a guide to the place.

I beg also to request that General Burhaus be instructed to send us at once eight thousand (8,000) sand-bags, to be used for tamping and other purposes.

I have the honor to be, general, very respectfully, your obedient servant.

A. E. BURNSIDE,

Major General Commanding.

Major General HUMPHREYS,

Chief of Staff.

Official :

CHARLES E. PEASE,

Assistant Adjutant General.

C.

HEADQUARTERS ARMY OF THE POTOMAC,

July 29, 1864—10.15 a. m.

I am instructed to say that the major general commanding submitted to the lieutenant general commanding the armies your proposition to form the leading columns of assault of the black troops, and that he, as well as the major general commanding, does not approve the proposition, but directs that those columns be formed of the white troops.

A. A. HUMPHREYS,

Major General and Chief of Staff.

COMMANDING OFFICER 9th Corps.

Official copy :

S. WILLIAMS, A. A. G.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—6 a. m.

Prisoners taken say there is no line in their rear, and that their men were falling back when ours advanced; that none of the troops have returned from the James. Our chance is now; push your men forward at all hazards, white and black, and don't lose time in making formations, but rush for the crest.

G. G. MEADE,

Major General Commanding.

Major General BURNSIDE,

Commanding 9th Corps.

Official copy :

S. WILLIAMS, A. A. G.

This report, which I made to Lieutenant General Grant immediately after the affair occurred, was accompanied by the official reports of the subordinate commanders. I subsequently appeared before the court of inquiry and made a very long and detailed statement, accompanied by all my despatches, illustrating all the events of the day, which it is not now in my power to make to this committee from want of material and the absence of those papers. I propose, therefore, with the sanction of the committee, to content myself with the submitting of those papers, provided that, if the suggestion I have made, that the committee call for the proceedings of this court of inquiry, is not acceded to, I shall then be permitted, upon some further occasion, when I can get my papers, to again appear before the committee and make such statement as I may desire to make.

Question. Can you state what was the cause of the delay in the explosion of the mine?

Answer. Yes, sir; that was caused by a defect in the fuse. That was an accident for which nobody was responsible. That was corrected by the gallantry of some soldiers, whose names I do not now remember, who went into the mine, found that the fuse had ceased to burn, and relighted it.

Question. Was there any delay in making the assault after the mine was exploded?

Answer. Yes, sir; not so much delay in making the assault as delay in taking advantage of the occupation of the crater of the mine within the enemy's line. There was some delay in making the charge. Arrangements which should have been made preparatory to that charge were not made, so far as I can ascertain. There was not a sufficient *debouche* from our line of works. There was a high parapet in front of our lines, an abattis and other obstacles to keep the enemy from us. Those obstacles should have been removed to enable our troops to move out promptly. There was but a small opening made, by which the 9th corps, 15,000 men, moved out by the flank; whereas there should have been an opening sufficiently large to have allowed the whole corps to move out and to have gone to the crest in not more than thirty minutes.

I will furnish the committee with a map which will show exactly the relative position of the mine with the enemy's lines and to our own, and which will show the position which it was desirous to take after the explosion of the mine. The explosion of the mine was simply a preliminary operation for the purpose of making an opening in the enemy's line through which we might pour our troops and get in rear and occupy a hill behind their line which commanded all their works. But, after getting into the crater of the mine, the troops never advanced beyond. No effort was made to gain possession of the hill beyond until the enemy had collected such a force that our troops were repulsed.

Question. Could this abattis have been cleared away prior to the springing of the mine?

Answer. Certainly; and it ought to have been done, and it was ordered to be done during the night previous.

Question. Can you state about how much delay there was, after the springing of the mine, before the charge was made?

Answer. The charge never was properly made. I think that in the course of twenty or twenty-five minutes the troops advanced and occupied the crater of the mine. But the charge was to have been made from the mine. There was no firing upon our troops until they got to the mine—nothing but marching ahead for the first half hour. During that time anybody could walk across and get to the mine. The charge was to have been made from the mine to the hill beyond. That charge never was made. But the troops kept crowding into this crater, which was a large hole some 150 feet in length by 50 feet in width and 25 feet in depth. The troops just crowded into that hole and the adjacent parts of the enemy's lines which had been abandoned for about a hundred yards on each side of the crater. That was immediately filled up by our troops. There they remained, and the more men there were there the worse it was. Their commanders could not keep order among them. The difficulty was to get the men out of this crater and to the hill beyond.

I probably ought to add that the condition of the army, from the long campaign in which it had been engaged, the number of battles it had fought, and the frequent attempts it had made to take the enemy's works, which had resulted unsuccessfully, the heat of midsummer—from all these causes the condition of the army was in some measure unfavorable for all operations of this kind. The men did not fight at that time with the vim with which they fought when we first crossed the Rapidan.

I am probably as ignorant as the committee in regard to many of these details. I did not hear the testimony before the court of inquiry; I was not present when it was taken. But undoubtedly the solution of all these questions will be

found in their proceedings. If I had them before me I could better answer your questions. I never could ascertain, and I do not know, why that charge was not made from the crater of the mine upon the crest of the hill beyond at the time when it might have been made.

I do not know who to censure, whether General Burnside or the soldiers of that command. I involved myself in a difficulty with General Burnside by surmising during the course of the operations that it was owing to some indisposition on the part of the men; that the men would not go forward; that their officers could not get them forward; and, in my anxiety to know the correct state of the case, in order that I might base my orders upon it—because I had made up my mind that if any such obstacle existed the men should be withdrawn and not uselessly slaughtered—I addressed a despatch between eight and nine o'clock in the morning to General Burnside, in reply to one which he had sent to me, in which he stated to me that he was trying to take the crest, but it was very hard. I asked what was the difficulty, and said that his men, so far as I could ascertain from such information as I could gather, had not advanced beyond the crater, and had made no attempt to take the crest; therefore I could not understand what the difficulty was. Then I asked him "Is it that you cannot get your orders obeyed, and that your men will not advance? I want to know the truth."

I did not mean to impugn General Burnside's veracity, or to suppose for an instant that he would tell me what was not true. All I meant to say was, "If you know this, you are naturally reluctant to acknowledge it; and in order to give you an opportunity to do so, I will make my request as urgent and emphatic as possible." General Burnside considered it a personal reflection upon himself and his veracity, and became very indignant. But it was not that. I wanted to know the exact state of the case. I had received a despatch which was intended for General Burnside, about six o'clock in the morning, or a little after six. The mine had been sprung at 4.45. The despatch was brought to me by an orderly. I was then at General Burnside's former headquarters, where I had established my headquarters during the day. The despatch was written by Colonel Loring, of General Burnside's staff, and was dated from the crater. It stated, "Ledlie's division has occupied the crater without opposition. But his men are crowding down in it and he cannot get them forward." That was the first cause of difficulty in getting the men to go forward. I sent the despatch to General Burnside, informing him that I had read it, and asked him to use every measure to push the men forward. For if we did not immediately take advantage of the opening for us made by the explosion of the mine, the time would soon go by in which we could do so. I made no further allusion to that.

When it came to eight and nine o'clock, and no advance was made, and I got this despatch from General Burnside, that it was very hard to get the men forward, I asked him, "What is the difficulty? Is it that your men will not go forward?" I drew the attention of the court of inquiry particularly to that, and requested that they would investigate and ascertain whether there was any difficulty on the part of the men, because the thing has occurred before, and it may occur again, that men will not do what they are wanted to do, and if that is the case, no officer should be held responsible.

Question. Were the supporting corps, on the right and left, engaged at the time of the attack?

Answer. No, sir; they could not be engaged, because they could not get out of our lines. The theory of the attack was this. The explosion of the mine would make an opening in the enemy's lines. General Burnside's corps, of 15,000 men, was to immediately take advantage of that and rush through and get on the crest beyond. The moment that was done, they were to be followed by General Ord and his corps, and then by about 10,000 men of General War-

ren's corps, which was massed and held in readiness immediately on General Burnside's left; and then eventually to be followed by General Hancock's forces. I had prepared a force of from 40,000 to 50,000 men, to take advantage of our success gained by General Burnside's corps. Their movements were essentially dependent upon General Burnside, if he failed, all the rest were to be kept quiet; when he did not get through, but was withdrawn, all the rest of the command was not called into action.

By Mr. Loan :

Question. If I understand your statement correctly, the theory of the operation was that after breaking their line by the explosion of the mine, General Burnside was to advance and siege the crest of the hill beyond. Then he was to be followed by General Ord and the 19th corps, and you had troops massed and all ready to support them if necessary ?

Answer. Yes, sir.

Question. From where did the assault upon the troops in the crater come ?

Answer. It came from the enemy.

Question. From what direction—from the right or left of the crater ?

Answer. It came principally from the right of the crater—from a ravine to the right of the crater. There the enemy brought guns from all points, and threw their shells into the crater.

Question. It was expected, I suppose, that the shock of the explosion would distract the attention of the enemy. Was there any arrangement made to attack the enemy in front of the corps to the right and left of the position of General Burnside, so as to keep them engaged, and prevent their attacking General Burnside ?

Answer. General Hancock was ordered, and so was General Warren, to hold themselves in readiness, and if there was the slightest disposition shown by the enemy to weaken their lines to assault the enemy. They sent me reports that the enemy's lines in their front were strongly held, and that they could do nothing; that the enemy had sent away none of their troops in their front, and it was impossible to do anything there. All that matter is in my testimony for the court of inquiry. After reading that testimony before that court, which I hope you will do, if any question then arises I will very readily answer it. My despatches are away from here now.

Question. I understand that the plan was for General Burnside to throw in his troops as soon as the mine was sprung, and to occupy the crest of the hill beyond.

Answer. Yes, sir.

Question. What co-operating assistance did you direct to be given to General Burnside in that matter ?

Answer. General Ord was directed to immediately follow General Burnside; to report to him, and to hold his command in readiness, which he did. General Warren was directed to mass all his available reserves, so as to prevent the enemy from making an attack, and to co-operate with General Burnside as soon as his (Burnside's) movements would justify his doing so. General Hancock was directed to hold his command in readiness, to watch the enemy's movements and keep them engaged in his front, and if he saw any abandonment of their lines, any opportunity to co-operate with General Burnside, to move forward and assault the enemy. Those orders were all given the morning of the attack.

Question. Did the enemy in front of Generals Hancock and Warren evacuate any portion of their lines ?

Answer. They held them so firmly that both of those officers reported to me in the field that it would be useless to make any assault upon them.

Question. Do you know whether any portion of the enemy opposed to Gen-

erals Hancock and Warren were directed against the forces of General Burnside in the crater?

Answer. I do not; my impression is, that the troops who operated against General Burnside's forces came from the enemy's extreme right, and did not embrace any that had been immediately in presence of our forces.

Question. Will you, as briefly as you can conveniently do so, tell us why it was white troops, instead of colored troops, was placed in the advance to carry that work, as I understand the case?

Answer. Prior to issuing the orders for the assault General Burnside told me it was his intention to place his colored division in the advance of the assaulting column. I objected to his doing so on the ground, not that I had any reason to believe that the colored troops would not do their duty as well as the white troops, but that, as they were a new division, and had never been under fire—had never been tried—and as this was an operation which I knew beforehand was one requiring the very best troops, I thought it impolitic to trust it to a division of whose reliability we had no evidence; therefore, I thought he ought to take one of his white divisions that he knew, from long experience, could be relied upon. General Burnside objected. I told him, then, that in view of his wishes upon the subject, I would report the matter to the lieutenant general; state to him my reasons, and those of General Burnside's, and let him decide. If he should decide that General Burnside's arguments were sound, and mine were wrong, then I would yield. The matter was referred to General Grant. and he confirmed my view that it would be impolitic, in a critical operation of that kind, to take troops that were untried, and place them in the advance, and it was upon that ground that General Burnside's opinion was overruled.

Question. What was the condition of General Burnside's white troops? Had they been exposed to any fatiguing duty for any great length of time previous to that assault?

Answer. They had been engaged in holding this line ever since we had arrived before Petersburg—just such duty as they are now performing, for that corps has got back into its old line.

Question. Was that duty calculated to exhaust the men and render them less efficient than under other circumstances?

Answer. I cannot say that I thought it was; as I have already told you, the general services performed by the army I thought had undoubtedly affected its morale. The whole army was not in the condition it was when it crossed the Rapidan. I do not think there was anything in the special services of the 9th corps to render that corps less efficient.

Question. Was there anything calculated to exhaust the white troops more than the colored troops?

Answer. I think not.

Question. The white troops were up to the same standard with the colored troops.

Answer. The colored troops had not been in the front. Up to that time they had not been engaged at all. The white troops had been engaged ever since they had crossed the Rapidan.

Question. Had the colored troops been drilled with especial view to making that charge?

Answer. I believe they had. By referring to my orders, a copy of which I have submitted to the committee, with my report, I think it will be apparent that so far as events could be anticipated in the movements of such large bodies of men, for there were nearly 50,000 men prepared to move, every contingency that could be thought of was had in view.

Question. Were the enemy in the habit of firing day and night upon our lines wherever any of our men showed themselves?

Answer. Yes, sir.

Question. Would it have been possible, without great loss of life to have removed the abattis in front of the 9th corps?

Answer. Yes, sir, it could have been done at night, without great loss of life, at least, that is my impression. But whatever might have been the loss of life, it was absolutely necessary for our further operations. I am of the opinion that it would not have been accompanied by any great loss of life.

By Mr. Chandler:

Question. Would it not have called the attention of the enemy to the proposed movement?

Answer. If they had seen it, it would undoubtedly have drawn their attention to it. However, it was one of the risks which we had to run.

Question. Can you give the distance our assaulting column had to move to reach the crater of the mine?

Answer. As near as we could tell, it was about one hundred yards; that was the estimated distance; I should say the distance between the two lines was about a hundred yards.

By Mr. Loan:

Question. You think there was a failure to prepare the necessary *debouchement* for our troops?

Answer. I think that was one of the difficulties, that sufficient arrangements had not been made in advance.

Question. Can you tell what time elapsed between the springing the mine and the occupation of the crater by our troops?

Answer. I do not think it was more than ten or fifteen minutes before the head of the column got in. But at nine o'clock in the day the whole of General Burnside's troops had not got out; I do not think he ever got all his men out of our line.

Question. Was there an attack upon the right, when the order was given to attack and seize the crest of the hill directly?

Answer. So far as I understand the circumstances, they were as follows: When I found that there was delay in the movement of this column up to the crest, I sent a despatch to General Burnside, urging him to push forward all his troops, without distinction of color, and to gain the crest as soon as possible; that despatch he sent to General Potter, directing him to immediately advance to the crest. He sent him a peremptory order, which order General Potter received about the time he was becoming engaged with the enemy, who were threatening him from the right. The order being peremptory, without reference to the condition of affairs, which General Burnside did not know, and which I did not know. General Potter being a good soldier, began his movement toward the crest, and was met by another force of the enemy, and compelled to fall back; that is the way I understand it. But in regard to that you can obtain the testimony of General Potter and others, who may give a different view of the matter.

Question. You have stated that you consulted the lieutenant general in regard to placing the colored troops in advance; was any further plan of General Burnside in regard to that assault submitted to General Grant at the same time?

Answer. I think he was informed of everything that General Burnside had informed me of.

Question. As I understand the matter, General Burnside had submitted to you in a communication a plan of attack for your consideration.

Answer. Yes, sir, and which I never disapproved of. The only question of difference was in regard to the troops to be employed. I never objected to his plan of handling his troops, I only objected to the colored troops being placed

in the advance. General Burnside seemed afterwards to be under the impression that I objected to all his plan.

Question. Was there anything in that plan which referred to the commanders of the corps on the right and left of General Burnside—any suggestions in regard to them?

Answer. No, sir, I do not think there was in that plan of his; but previous to that there had been a question between General Burnside and myself in reference to the corps commanders on his right and left, which I will explain to you, because I suppose that is what you refer to, and I want to make my way smooth as well as your own.

Question. I may be mistaken, but I asked the question so that if I am not mistaken you can explain it. If I understand the matter rightly, General Burnside suggested to you a plan of operations. The question I wanted to get at was whether that whole plan had been submitted to Lieutenant General Grant, and whether it met his approval, and your approval—whether it was adopted or not.

Answer. So far as my recollection serves me, I think there was no general plan, involving the movements of the whole army, submitted to me by General Burnside. There was a plan involving the movements of his own corps, which he submitted to me; but that referred simply to the movements of his advance division. The only objection I intended to make to that plan was to the use of the colored troops in the advance. As to his tactical formation, and what he was to do with his troops, I made no objection. Therefore I think it extremely probable that I did not submit to General Grant anything but the question in regard to the colored troops.

Question. I understand you to say that the delay in the explosion of the mine arose from the failure of the fuse to burn.

Answer. Yes, sir.

Question. How many lines of fuse were used to explode that mine?

Answer. I am under the impression that there were three lines of fuse; at least I think General Burnside so reported. Whether the fact was that there were three fuses or not, I never inquired.

Question. There must have been a failure to burn of all three, if three were ignited. I want to ascertain whether there were three fuses or not.

Answer. That is more than I can tell; I can only tell that the fuse failed to burn.

Question. If there was but one line of fuse, I wanted to learn whether ordinary prudence was exercised in a case of that importance. If there were three lines of fuse, there can be no question about the prudence exercised.

Answer. That would bring up a question which I never asked, whether there were three fuses, and if so, whether they were all fired. I recollect very well that General Burnside said there were three fuses; and my recollection is that when the delay was explained, General Burnside said the fault had been found in a fuse about fifty feet from the mouth of the gallery, and that the fuse had been reignited and had then gone off. But why it was that he did not ignite one of the other fuses I do not know.

Question. Would not ordinary prudence in an affair of that magnitude have required the three fuses to have been ignited, so as to have secured three chances for the explosion of the mine, instead of one?

Answer. Yes, sir.

Question. Were any orders sent to General Burnside to retreat, or to withdraw his troops from the crater?

Answer. Yes, sir; he was directed about ten or eleven o'clock to withdraw. The first order sent to him was a distinct order to withdraw. General Burnside came to the position where I was with General Grant, at the headquarters on the field, and stated that in his judgment it would be injudicious to withdraw at

that moment—that it would cause great sacrifice of life. I immediately authorized him, in writing, to exercise his judgment in the withdrawal—to remain there as long as he deemed it necessary for the secure withdrawal of his command—stating that he could remain there, if he chose, until night.

Question. As I understand you, General Potter, who was moving to the right to attack, upon the reception of his orders changed his movement towards the crest of the hill, where he was met by the enemy and repulsed?

Answer. Yes, sir, so I understand.

Question. Were there any other troops of the 9th corps, or any troops of any corps that got beyond the crater during the engagement?

Answer. I think the colored troops got beyond the crater, were forming beyond the crater when they received the artillery fire which caused them to break and go to the rear.

Question. About what hour in the morning was that?

Answer. I cannot exactly say, but I should think it was about 8 o'clock; perhaps between 8 and 9 o'clock.

HEADQUARTERS ARMY OF THE POTOMAC,

January 16, 1865.

SIR: I herewith transmit by the hands of my aide, Major Bache, additional testimony which I desire placed on record in relation to the affair of July 30, 1864. It includes the statement made by me to the court of inquiry, and is forwarded in accordance with the privilege accorded me by the committee authorizing me to add anything I chose to my deposition of the 20th ultimo.

Very respectfully, your obedient servant,

GEORGE G. MEADE,

Major General United States Army.

Hon. B. F. WADE,

Chairman Com. on Conduct of War, Washington, D. C.

Major General Meade's testimony before Court of Inquiry.

Major General Meade, United States volunteers, being duly sworn, says:

I propose in the statement that I shall make to the court—I presume the court want me to make a statement of facts in connexion with this case—to give a slight preliminary history of certain events and operations which culminated in the assault on July 30th, and which, in my judgment, are necessary to show to this court that I had a full appreciation of the difficulties that were to be encountered, and that I had endeavored, so far as my capacity and judgment would enable me, not only to anticipate, but to take measures to overcome those difficulties.

The mine constructed in front of General Burnside was commenced by that officer soon after the occupation of our present lines, upon the intercession of Lieutenant Colonel Pleasants, I think, of a Pennsylvanian regiment, without any reference to, or any sanction obtained from, the general headquarters of the army of the Potomac. When the subject was brought to my knowledge, I authorized the continuance of the operations, sanctioned them, and trusted that the work would at some time result in forming an important part in our operations. But from the first I never considered that the location of General Burnside's mine was a proper one, because, from what I could ascertain, the position of the enemy's works and lines erected at that time, the position

against which he operated, was not a suitable one in which to assault the enemy's lines, as it was commanded on both flanks, and taken in reverse by their position on the Jerusalem plank road, and their works opposite the Hare House.

I will now read to the court the despatches which passed between Lieutenant General Grant, commanding the armies of the United States and myself, which will bear in themselves a sort of history of the preliminary operations, a correspondence which resulted, as I said before, in the final arrangements for the assault on July 30th.

On the 24th July I received a letter from the lieutenant general commanding, which I will now read. I had been previously informed by the lieutenant general commanding that he desired some operations to take place offensive, against the enemy, and he had instructed the engineer officer at his headquarters, the engineer officer at General Butler's headquarters, and the engineer officer at the headquarters army of Potomac, to make an examination of the enemy's position, and give an opinion as to the probable result of an attack. Their opinion is contained in the following letter:

HEADQUARTERS ARMIES OF THE UNITED STATES,
City Point, Va., July 24, 1864.

Maj. Genl. GEORGE G. MEADE, *Commanding Army of the Potomac:*

The engineer officers who made a survey of the front from Bermuda Hundred report against the probability of success from an attack there, the chances they think will be better on Burnside's front. If this is attempted, it will be necessary to concentrate all the force possible at the point in the enemy's line we expect to penetrate. All officers should be fully impressed of the absolute necessity of pushing entirely beyond the enemy's present line, if they should succeed in penetrating it, and of getting back to their present line promptly, if they should not succeed in breaking through.

To the right and left of the point of assault, all the artillery possible should be brought to play upon the enemy in front during the assault. Thin lines would be sufficient for the support of the artillery, and all the reserves could be brought on the flank of their commands nearest to the point of assault ready to follow in if successful. The field artillery and infantry, held in the lines during the first assault, should be in readiness to move at a moment's notice, either to their front or to follow the main assault, as they should receive orders. One thing, however, should be impressed on corps commanders: if they see the enemy giving way in their front, or moving from it to reinforce a heavily assaulted position of their line, they should take advantage of such knowledge, and act promptly without waiting for orders from their army commander.

General Ord can co-operate with his corps in this movement, and about five thousand troops from Bermuda Hundred can be sent to reinforce you, or can be used to threaten an assault between the Appomattox and James river, as may be deemed best.

This should be done by Tuesday morning, if done at all. If not attempted we will then start at the date indicated to destroy the railroad as far as Hicksford, at least, and to Weldon, if possible.

Please give me your views on this matter, and I will order at once. In this I have said nothing of the part to be taken by the cavalry, in case the enemy's lines are assaulted. The best disposition to be made of them probably would be to place them on the extreme left, with instructions to skirmish with the enemy and drive him back if possible, following up any success gained in that way according to the judgment of the commander, or orders he may receive.

Whether we send an expedition on the railroad, or assault at Petersburg, Burnside's mine will be blown up.

As it is impossible to hide preparations from our own officers and men, and consequently from the enemy, it will be well to have it understood as far as possible that just the reverse of what we intend is in contemplation.

I am, general, very respectfully, &c.,

U. S. GRANT,
Lieutenant General.

Official copy :

S. F. BARSTOW, *A. A. G.*

I desire to call the particular attention of the court to that communication, because it contains the views of the lieutenant general commanding with reference to the assault which should be made on Petersburg, and I wish them to compare this communication with the orders and arrangements that I gave and made, so that they may see to the best of my ability that I ordered everything which he indicated to be done.

At the time that this communication was made to me, however, I was under the impression that the obstacles to be overcome were more formidable than the subsequent operations led me to believe, and also that subsequent to that time there had been no movement of the army to produce that great weakening of the enemy's front which afterwards occurred. Therefore my reply was to the effect that I was opposed to our making the assault.

The following is my reply, sent on the 24th :

HEADQUARTERS ARMY OF THE POTOMAC,
July 24, 1864.

GENERAL : I have received your letter per Lieutenant Colonel Comstock. In reply thereto I have to state that yesterday I made in person a close and careful reconnoissance of the enemy's position in my front. Although I could not detect any positive indication of a second line, yet, from certain appearances at various points, I became satisfied that a second line does exist on the crest of the ridge, just in rear of the position of Burnside's mine. I have no doubt of the successful explosion of the mine, and of our ability to crown the crater, effect a lodgment, and compel the evacuation of the enemy's present occupied line, but from their redoubt on the Jerusalem plank road, and from their position in front of the Hare House, their artillery fire would render our lodgment untenable, and compel our advance or withdrawal.

The advance, of course, should be made, but its success would depend on the question whether the enemy have a line on the crest of the ridge. If they have, with the artillery fire they can bring to bear on the approaches to this second hill, I do not deem it practicable to carry the line by assault, and from my examination, together with the evident necessity of their having such a line, I am forced to believe we shall find one there.

I cannot therefore advise the attempt being made, but should it be deemed expedient to take the risks, and there is certainly room for doubt, I would like a little more time than is given in your note in order to place in position the maximum amount of artillery to bear upon the lines not assaulted. In reference to the assaulting force, it will be composed of the 9th and 2d corps.

The 5th corps will have to remain in their present position, and be prepared to meet any attempt of the enemy to turn our left flank, which is not altogether unlikely, particularly if we should fail in our assault, and be compelled to withdraw.

I am fully impressed with the importance of taking some immediate action, and am satisfied that, excepting regular approaches, the springing of Burnside's mine and subsequent assault is the most practicable, and I am not prepared to say the attempt would be *hopeless*. I am, however, of the opinion, so far as I can

judge, that the chances of its success are not such as to make it expedient to attempt it.

Very respectfully, yours,

GEORGE G. MEADE,
Maj. Genl. Com'dg.

Lieutenant General U. S. GRANT,

Official :

S. F. BARSTOW, *A. A. G.*

P. S.—I enclose you a report of Major Duane which confirms my views; if Wright is soon to return, and we can extend our lines to the Weldon railroad, we could then advanced against the salient on the Jerusalem plank road, and make an attempt to carry them at the same time we assaulted in Burnside's front.

This was my view some time ago, and we have been preparing the necessary siege works for this purpose. Under your instructions, however, none of the heavy guns and material have been brought to the front, and it would take, perhaps, two days to get them up.

GEORGE G. MEADE.

Official copy :

S. F. BARSTOW, *A. A. G.*

HEADQUARTERS ARMY OF THE POTOMAC,
Office of Chief Engineer, July 24, 1864.

Major General MEADE, *Commanding Army of the Potomac.*

In reply to your communication of this date, I have the honor to state that the line of the enemy's works in front of General Burnside is not situated on the crest of the ridge separating us from Petersburg. That the enemy have undoubtedly occupied this ridge as a second line.

Should General Burnside succeed in exploding his mine, he would probably be able to take the enemy's first line, which is about one hundred yards in advance of his approach. Beyond this I do not think he could advance until the works in front of the fifth corps are carried, as the ninth corps column would be taken in flank by a heavy artillery fire from works in front of the centre of the fifth corps, and in front by fire from the works on the crest near the Cemetery hill. I do not believe that the works in front of the 5th corps can be carried until our lines can be extended so as to envelope the enemy's line.

Very respectfully, your obedient servant,

J. C. DUANE,
Major Engineers, United States Army.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

In reply to that I received a communication or report from General Grant, the result of which was a suspension of the proposed attack :

HEADQUARTERS ARMIES OF THE UNITED STATES,
City Point, July 24, 1864.

GENERAL : Your note brought by Colonel Comstock is received. It will be necessary to act without expecting Wright. He is now in Washington; but it is not fully assured yet that Early has left the valley, and if Wright was to start back no doubt the Maryland raid would be repeated. I am not willing to attempt a movement so hazardous as the one against intrenched lines, against the

judgment of yourself and your engineer officers, and arrived at after a more careful survey of the grounds than I have given it. I will let you know, however, in the morning what determination I come to.

Very respectfully, your obedient servant,

U. S. GRANT,
Lieutenant General.

Major General MEADE,
Commanding Army of the Potomac.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

Next day I made a closer examination ; and in the mean time a signal station was erected in a pine tree in front of General Burnside, which gave us a more complete view than we had previously had of the enemy's line. My observations modified my views, because I could not detect a second line, although I detected isolated batteries on the crest. I therefore wrote the following communication to General Grant, dated 12 m., July 26 :

HEADQUARTERS ARMY OF THE POTOMAC,
12 m., July 26, 1864.

Lieutenant General GRANT :

More critical examinations from a new signal station would lead to the conclusion that the enemy have detached works on the ridge in front of Burnside, but they have no connected line. This fact increases the chances of a successful assault ; and, taken in connexion with the fact that General Burnside does not now think the enemy have discovered his mine, on the contrary, believes they are laying the platform for a battery right over it.

I have suspended the orders to load and discharge it to-morrow, as it may yet be useful in connexion with further operations.

I am afraid the appearance of McLaw's division, together with Willcox's, previously reported, will prevent any chance of a surprise on the part of our people to-morrow. Yesterday's Richmond Examiner also says your strategic movements are known, and preparations made to meet them, referring, I presume, to Foster's operations.

There was considerable shelling by the enemy yesterday afternoon all along our lines, brought on, I think, by Burnside discovering a camp he had not before seen and ordering it shelled. No serious casualties were produced on our side, but the 5th corps working parties were very much annoyed and interrupted. With this exception, all was quiet.

GEO. G. MEADE,
Major General.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

To which I received the following reply :

UNITED STATES MILITARY TELEGRAPH,
By telegraph from City Point, 3 p. m., dated July 26, 1864.

Major General MEADE :

The information you have just sent, and all information received on the subject, indicates a probability that the enemy are looking for a formidable attack either from General Burnside or north of the James river, and that they will detach from Petersburg heavily to prevent its success. This will make your remaining two corps, with the 18th, relatively stronger against the enemy at

Petersburg than we have been since the first day. It will be well, therefore, to prepare for an assault in General Burnside's front, only to be made if further development justifies it. If made it would be necessary to abandon most of the front now held by the 5th corps.

U. S. GRANT,
Lieutenant General.

Official copy :

Assistant Adjutant General.

There you perceive that the Lieutenant General commanding ordered that whilst the 2d corps was across the James river I should immediately make an assault with the 9th and 5th, abandoning the line of the 5th corps. In answer to that I wrote him the following despatch :

HEADQUARTERS ARMY OF THE POTOMAC,
5.30 p. m., July 26, 1864.

Lieutenant General U. S. GRANT :

Telegram 3 p. m. received. The only preparation that can be made is the loading of Burnside's mine. I cannot advise an assault with the 2d corps absent, for some force must be left to hold our lines and protect our batteries.

The withdrawal of the 5th corps would prevent any attempt on our part to silence the fire of the enemy's guns in front of the 5th corps, and unless these guns are silenced no advance can be made across the open ground in front of the 9th corps.

It is not the numbers of the enemy which oppose our taking Petersburg; it is their artillery and their works, which can be held by reduced numbers against direct assault.

I have just sent you a despatch indicating an attack on my left flank by the enemy. This is my weak point, and a formidable attack turning my flank would require all my force to meet successfully.

GEO. G. MEADE, *Major General.*

Official :

S. F. BARSTOW,
Assistant Adjutant General.

That produced a suspension of the order to attack until the return of General Hancock.

The next despatch I received from General Grant was as follows :

UNITED STATES MILITARY TELEGRAPH,
BY TELEGRAPH FROM CITY POINT,
12.20 p. m., dated July 28, 1864.

Major General MEADE :

Your despatch of 12 m. received. Unless something turns up north of the James between this and night that I do not expect, you may withdraw Hancock, to be followed by Sheridan, and make arrangements for assault as soon as it can be made. We can determine by the movements of the enemy before the time comes whether it will be advisable to go on with the assault. I will put in the 18th corps, or not, as you deem best.

U. S. GRANT, *Lieutenant General.*

Official :

Assistant Adjutant General.

Which I answered at 1 p. m., July 28th, as follows :

HEADQUARTERS ARMY OF THE POTOMAC,
1 p. m., July 28, 1864.

Lieutenant General GRANT :

Your despatch of 12.20 received. On reflection, I think daylight of the 30th is the earliest time it would be advisable to make the assault. Besides the time required to get up heavy guns and mortars, we require the night to make certain preliminary arrangements, such as massing troops, removing abattis from the debouche of the assaulting column, &c. I shall make the assault with the 9th corps, supported by the 2d. The reserves of the 18th should be held in readiness to take part, and if developments justify it, all of Ord's and Warren's commands can be put in.

GEO. G. MEADE, *Major General.*

Official :

S. F. BARSTOW,
Assistant Adjutant General.

I will here observe that Lieutenant General Grant, in consequence of the service which the 2d corps had performed across the river, desired, and gave me directions verbally to that effect, to use the 18th corps in the assault, and to let the 2d corps take the place of the 18th in the line.

The next despatch I received was the following, dated City Point, July 29th :

HEADQUARTERS ARMIES OF THE UNITED STATES,
City Point, Va., July 29, 1864.

GENERAL : I have directed General Butler to order General Ord to report to you for the attack on Petersburg. The details for the assault I leave to you to make out.

I directed General Sheridan, whilst we were at Deep Bottom last evening, to move his command immediately to the left of Warren from Deep Bottom. It will be well to direct the cavalry to endeavor to get round the enemy's right flank, whilst they will not probably succeed in turning the enemy, they will detain a large force to prevent it. I will go out this evening to see you, will be at your headquarters about 4 p. m.

Very respectfully, your obedient servant,

U. S. GRANT, *Lieutenant General.*

Official :

Assistant Adjutant General.

Major General GEO. G. MEADE,
Commanding Army of the Potomac:

P. S. If you want to be at any place on the line at the hour indicated, inform me by telegraph, and I will meet you wherever you may be.

U. S. G.

General Grant came to my headquarters at 4 p. m. July 29th, and at that time I showed him the order for the assault next day, which I had just then prepared, and which order met with his perfect approbation : he read the order and expressed his satisfaction with it. No other despatches passed between the Lieutenant General and myself.

Next morning between half past three and four o'clock—before four o'clock, he arrived on the ground, at General Burnside's headquarters, and all further communications between us were verbal, until August 1st at 11.40 a. m., when I received the following despatch :

[Cipher, received 11.40 a. m.]

By telegraph from City Point, 9.30 a. m., dated August 1, 1864.

Major General MEADE :

Have you any estimate of our losses in the miserable failure of Saturday ? I think there will have to be an investigation of the matter. So fair an opportunity will probably never occur again for carrying fortifications ; preparations were good, orders ample, and everything, so far as I could see subsequent to the explosion of the mine, shows that almost without loss the crest beyond the mine could have been carried ; this would have given us Petersburg with all its artillery, and a large part of the garrison beyond doubt. An intercepted despatch states that the enemy recaptured their line with General Bartlett and staff, seventy-five commissioned officers, and nine hundred rank and file, and recaptured five hundred of their men.

U. S. GRANT,
Lieutenant General.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

We had given our respective views concerning the assault, and particularly impressed my views with reference to the difficulty to be overcome. When it was ascertained that the movement of the 2d corps had drawn over to the north bank of the James five of the eight divisions composing General Lee's army, together with the information I had obtained that the enemy had no second line upon the ridge, but only one or two isolated batteries, I came to the conclusion that the explosion of the mine, and the subsequent assault on the crest I had every reason to believe would be successful, and would be followed by results which would have consisted in the capture of the whole of the enemy's artillery, and a greater part of his infantry.

The plan sketched out by Lieutenant General Grant in his despatch to me, which I endeavored to carry out, and for the execution of which I gave the necessary orders, was, that the mine should be exploded as early as possible in the morning, before daylight ; that in the mean time the 9th corps should be massed and formed in assaulting columns ; that every preparation should be made by removing the abattis so that the troops could debouche, and particularly the assaulting columns ; that as soon as the mine was exploded, the assaulting columns should push forward ; that a sufficient proportion should be left to guard the flanks of the main column, because they had to look for an attack on the flanks ; that the main body should hold the lines during the attempt to gain the crest of the hill, and if it was successful, then I intended to throw up the whole of the 18th corps to be followed up by the 2d corps, and if necessary by the 5th corps also. I do not suppose it is necessary to read the order. I will read it, however.

ORDERS.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864.

The following instructions are issued for the guidance of all concerned :

1. As soon as it is dark, Major General Burnside, commanding 9th corps, will withdraw his two brigades under General White, occupying the entrenchments between the Plank and Norfolk roads, and bring them to his front. Care will be taken not to interfere with the troops of the 18th corps moving into their position in rear of the 9th corps. General Burnside will form his troops for assaulting the enemy's works at daylight of the 30th, prepare his parapets and

abattis for the passage of the columns, and have the pioneers equipped for work in opening passages for artillery, destroying enemy's abattis, &c., and the entrenching tools distributed for effecting lodgements, &c.

2. Major General Warren, commanding 5th corps, will reduce the number of his troops holding the entrenchments of his front to the minimum, and concentrate all his available forces on his right, and hold them prepared to support the assault of Major General Burnside. The preparations in respect to pioneers, entrenching tools, &c., enjoined upon the 9th corps, will also be made by the 5th corps.

3. As soon as it is dark Major General Ord, commanding 18th corps, will relieve his troops in the trenches by General Mott's division of the 2d corps, and form his corps in rear of the 9th corps, and be prepared to support the assault of Major General Burnside.

4. Every preparation will be made for moving forward the field artillery of each corps.

5. At dark Major General Hancock, commanding 2d corps, will move from Deep Bottom, to the rear of the entrenchments now held by the 18th corps, resume the command of Mott's division, and be prepared at daylight to follow up the assaulting and supporting columns, or for such other operations as may be found necessary.

6. Major General Sheridan, commanding cavalry corps, will proceed at dark from the vicinity of Deep Bottom, to Lee's Mill, and at daylight will move with his whole corps, including Wilson's division, against the enemy's troops defending Petersburg on their right by the roads leading to that town from the southward and westward.

7. Major Duane, Acting Chief Engineer, will have the pontoon trains parked at convenient points in the rear, prepared to move. He will see that supplies of sand-bags, gabions, fascines, &c., are in depot near the lines, ready for use.

He will detail engineer officers for each corps.

8. At half past three in the morning of the 30th, Major General Burnside will spring his mine, and his assaulting columns will immediately move rapidly upon the breach, seize the crest in the rear, and effect a lodgement there. He will be followed by Major General Ord, who will support him on the right, directing his movement to the crest indicated, and by Major General Warren, who will support him on the left.

Upon the explosion of the mine, the artillery of all kinds in battery will open upon those points of the enemy's works whose fire covers the ground over which our columns must move, care being taken to avoid impeding the progress of our troops.

Special instructions respecting the direction of fire will be issued through the chief of artillery.

9. Corps commanders will report to the commanding general when their preparations are complete, and will advise him of every step in the progress of the operations, and of everything of importance that occurs.

10. Promptitude, rapidity of execution, and cordial co-operation are essential to success, and the commanding general is confident that this indication of his expectations will insure the hearty efforts of the commanders and troops.

11. Headquarters during the operations will be at the headquarters of the 9th corps.

By command of Major General MEADE.

S. WILLIAMS,
Assistant Adjutant General.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

Having read to the court the correspondence which passed between the lieutenant general and myself preliminary to the operations, and having read the order for the operations, I now propose to read and accompany with some explanatory remarks the despatches and correspondence which passed between myself and Major General Burnside, who had the immediate active operations to perform; afterwards between myself and Major General Ord, between myself and Major General Warren, and between myself and Major General Hancock. These despatches, when compared with each other, and in connexion with the remarks which I shall make, will show the facts so far as they came to my knowledge; and I wish the court to bear in mind, and I desire to call their attention particularly to the paucity of information which was furnished me by Major General Burnside of the operations which were made, and to the difficulty that a major general commanding an army like the one I am commanding labors under to give direct orders in the ignorance of matters transpiring in the front at the immediate scene of operations.

Before the operations were concluded upon I called upon Major General Burnside to furnish me in writing what he proposed to do in case his mine was exploded. In response to which I received the following report:

HEADQUARTERS NINTH ARMY CORPS,

July 26, 1864.

GENERAL: I have the honor to acknowledge the receipt of your notes of this morning by Captains Jay and Bache, also a telegram from the commanding general relating to the same subject.

It is altogether probable that the enemy are cognizant of the fact that we are mining, because it has been mentioned in their newspapers, and they have been heard to work in what are supposed to be shafts in close proximity to our galleries; but the rain of night before last no doubt filled their shafts and much retarded their work. We have heard no sounds of work in them either yesterday or to-day, and nothing is heard by us in the mine but the usual sounds of work on the surface above. This morning we had some apprehensions that the left lateral gallery was in danger of caving in from the weight of the batteries above it and the shock of their firing; but all possible precautions have been taken to strengthen it, and we hope to preserve it intact. The placing of the charges in the mine will not involve the necessity of making a noise. It is therefore probable that we will escape discovery, if the mine is to be used within two or three days. It is nevertheless highly important, in my opinion, that the mine should be exploded at the earliest possible moment consistent with the general interest of the campaign. I state to you the facts as nearly as I can; and, in the absence of any knowledge as to the meditated movement of the army, I must leave you to judge the proper time to make use of the mine; but it may not be improper for me to say, that the advantages to be reaped from the work would be but small if it were exploded without any co-operative movements.

My plan would be to explode the mine just before daylight in the morning, or about five o'clock in the afternoon; mass the two brigades of the colored division in rear of my line in column of divisions—double column closed in mass; the head of each brigade resting on the front line, and as soon as the explosion has taken place move them forward, with instructions for the divisions to take half-distance; and as soon as the leading regiments of the two brigades pass through the gap in the enemy's line, the leading regiment of the right brigade to come into line perpendicular to the enemy's line by the right companies on the right into line, "wheel the left companies on the left into line," and proceed at once down the line of the enemy's work as rapidly as possible; the leading regiment of the left brigade to execute the reverse movement to the left, moving up the enemy's line; the remainder of the two columns to move

directly towards the crest in front as rapidly as possible, diverging in such a way as to enable them to deploy into columns of regiments, the right column making as nearly as may be for Cemetery hill; these columns to be followed by the other divisions of this corps as soon as they can be thrown in; this would involve the necessity of relieving these divisions by other troops before the movement, and of holding columns of other troops in readiness to take our place on the crest, in case we gain it and sweep down it. It would be advisable, in my opinion, if we succeed in gaining the crest, to throw the colored division right into the town. There is a necessity for the co-operation, at least in the way of artillery, of the troops on my right and left; of the extent of this you will necessarily be the judge. I think our chances of success in a plan of this kind are more than even. The main gallery of the mine is five hundred and twenty-two (522) feet in length; the side galleries, about forty feet each. My suggestion is, that eight magazines be placed in the lateral galleries—two at each end, say a few feet apart, in branches at right angles to the side galleries; and two more in each of the side galleries, similarly placed, situated by pairs, equidistant from each other and the end of the galleries, thus:

[See diagram, page 16.]

Tamping beginning at the termination of the main gallery for, say, one hundred feet, leaving all the air space in the side galleries. Run out some five or six fuses, and two wires, to render the ignition of the charge certain. I propose to put in each of the eight magazines from twelve to fourteen hundred pounds of powder, the magazines to be connected by a trough of powder instead of a fuse.

I beg to enclose a copy of a statement from General Potter on the subject. I would suggest that the powder train be parked in a wood near our ammunition train, about a mile in rear of this place. Lieutenant Colonel Pierce, chief quartermaster, will furnish Captain Strand with a guide to the place.

I beg also to request that General Benham be instructed to send us, at once, eight thousand (8,000) sand-bags, to be used for tamping and other purposes.

I have the honor to be, general, very respectfully, your obedient servant,

A. E. BURNSIDE,

Major General, Commanding.

Major General HUMPHREYS,

Chief of Staff.

Official :

S. F. BARSTOW,

Assistant Adjutant General.

The request made in that letter by Major General Burnside was complied with; that is to say, sand-bags were furnished him; but the amount of powder asked for, which was twelve thousand pounds, was reduced to eight thousand pounds, upon the belief on my part, and on my engineers, that eight thousand pounds would be sufficient for the purpose.

Another matter in that despatch to which my attention was directed, and which was finally the subject of an order on my part, is the suggestion of Major General Burnside to place the colored troops at the head of the assaulting column. That I disapproved, and I informed him of my disapproval, which was based upon the ground, not that I had any reason to doubt, or any desire to doubt the good qualities of the colored troops, but that I desired to impress upon Major General Burnside, which I did do in conversations, of which I have plenty of witnesses to evidence, and in every way I could, that the operation was to be a coup-de-main, that his assaulting column was to be as a forlorn hope, such as are put into breaches, and that he should assault with his best troops; not that I had any intention to insinuate that the colored troops were

inferior to his best troops, but that I understood that they had never been under fire, nor that they should not be taken for such a critical operation as this, but that he should take such troops as from previous service could be depended upon as being perfectly reliable. Finding General Burnside very much disappointed—for he had made known to General Ferrero and his troops that they were to lead in the assault—and fearing that the effect might be injurious, and in order to show him that I was not governed by any motive other than such as I ought to be governed by, I told him I would submit the matter, with his reasons and my objections, to the lieutenant general commanding the armies, and I would abide by the decision of the lieutenant general, as to whether it was expedient and right for the colored troops to lead the assault. Upon referring the question to the lieutenant general, commanding, he fully concurred in my views, and I accordingly addressed to Major General Burnside, or had addressed to him, the following communication :

HEADQUARTERS ARMY OF THE POTOMAC,

10 $\frac{1}{4}$ a. m., July 29, 1864.

Major General BURNSIDE, *commanding 9th Corps* :

I am instructed to say that the major general commanding submitted to the lieutenant general commanding the armies your proposition to form the leading columns of assault of the black troops, and that he, as well as the major general commanding, does not approve the proposition, but directs that these columns be formed of the white troops.

A. A. HUMPHREYS,

Major General, Chief of Staff.

Official :

S. F. BARSTOW, *A. A. G.*

The next despatches to Major General Burnside were addressed by me at 9.45 p. m., July 29, the evening before the action. I had received a despatch from General Ord, stating that it would take him till very late to relieve the troops in the trenches.

The following is my despatch to General Burnside :

HEADQUARTERS ARMY OF THE POTOMAC,

July 29—9 $\frac{1}{4}$ p. m., 1864.

Major General BURNSIDE, *commanding 9th Corps* :

A despatch from General Ord refers to the late hour at which his troops will relieve yours in the trenches. The commanding general has informed General Ord that it is not necessary for you to wait for your troops to be relieved in the trenches by General Ord before forming them for the assault. They should be formed for the assault at the hour you deem best, without any reference to General Ord's troops, who will enter the vacated trenches as soon as they can.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official :

S. F. BARSTOW, *A. A. G.*

My idea was that General Burnside should form his columns of assault, make all his preparations, take all his men out of the trenches, and move forward ; and that then General Ord should occupy his trenches in case he should find it necessary to return. No further despatches passed between General Burnside and myself. I think it proper to state, however, that on the day previous to the assault I was at General Burnside's headquarters, and had the good fortune to meet his three division commanders, and some conversation passed between us, and I would like the court to inquire into what transpired on that occasion, because I would like to impress upon the court, as I did impress upon General

Burnside and his officers, that this operation which we had to perform was one purely of time; that if immediate advantage was not taken of the explosion of the mine, and the consequent confusion of the enemy, and the crest immediately gained, it would be impossible to remain there, for that as soon as the enemy should recover from their confusion, they would bring their troops and batteries to bear upon us and we would be driven out. That there were two things to be done, namely, that we should go up promptly and take the crest; for, in my judgment, the mere occupation of the crater and the holding on to that was of no possible use to us, because the enemy's line was not such a line as would be of advantage for us to hold, except to go from it to the crest, and that the troops were to be withdrawn when the assault proved unsuccessful.

I saw Potter, Ledlie, and Willcox, and I referred in the presence of those gentlemen to the tactical manœuvres to be made between that crater and the crest—that the only thing to be done was to rush for the crest and take it immediately after the explosion had taken place; and that they might rest assured that any attempt to take time to form their troops would result in a repulse.

These were all the despatches that transpired between General Burnside and myself before the day of the assault.

On the morning of the 30th about a quarter past three o'clock, when I was about preparing to go forward to General Burnside's headquarters, I found that it was very dark, and suggestions being made by some of my officers that it was too dark to operate successfully, and that a postponement of the explosion of the mine might be advantageous, I accordingly addressed a despatch to General Burnside to the following effect:

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—3.20 a. m.

Major General BURNSIDE:

As it is still so dark, the commanding general says you can postpone firing the mine if you think proper.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. F. BARSTOW, A. A. G.

To that I received the following reply from General Burnside:

BY TELEGRAPH FROM NINTH ARMY CORPS,

Dated July 30, 1864—3.20 a. m.

Major General HUMPHREYS:

The mine will be fired at the time designated. My headquarters will be at the 14 gun battery.

A. E. BURNSIDE,

Major General.

Official:

S. F. BARSTOW, A. A. G.

I then went over to General Burnside's headquarters, he, during these operations, being further to the front. The hour had arrived. I stood waiting. I heard no report from General Burnside and no explosion of the mine. In the mean time Lieutenant General Grant arrived. Finding that there was no explosion, I sent two staff officers, first Captain Jay, and then ———, I do not recollect the name of the other; but I sent two staff officers to General Burnside to ascertain what the difficulty was, if there was any difficulty; why his mine did not explode, if he knew; to which I received no answer. At 4.10 the following despatch was sent to him:

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—4½ a. m.

Major General BURNSIDE :

Is there any difficulty in exploding the mine ? It is now three-quarters of an hour later than that fixed upon for exploding it

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW, A. A. G.

And to this I got no answer.

At 4.20 another despatch was sent to him, as follows :

HEADQUARTERS ARMY OF THE POTOMAC,
July 30th, 1864.

OPERATOR at General Burnside's field headquarters :

Is General Burnside at his headquarters ? The commanding general is anxious to learn what is the cause of delay.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

I should have stated before this, that in order to secure the speedy transmission of intelligence, I took the precaution to have a telegraph run from my headquarters, in General Burnside's camp, to where General Burnside had established his headquarters for the day, in the 14-gun battery.

The following is the next despatch I sent to General Burnside :

HEADQUARTERS ARMY OF THE POTOMAC,
July 30—4.35 a. m., 1864.

Major General BURNSIDE :

If the mine cannot be exploded, something else must be done and at once. The commanding general is awaiting to hear from you before determining.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

To this I received no reply. Finding that no replies were received, and the lieutenant general commanding desiring that an immediate assault should be made without reference to the mine, at 4.35 the following despatch was sent to General Burnside.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30—4.35 a. m., 1864.

Major General BURNSIDE, commanding 9th Corps :

The commanding general directs that, if your mine has failed, that you make an assault at once, opening your batteries.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

The same orders you will find were sent to General Warren, to General Mott, and to General Hunt, to open the artillery. About this time, however, about 4.40, the mine was exploded. In the mean time Captain Jayre turned, and informed me that the fuse had failed, that a defect was found, and the fuse had been overhauled, about fifty feet or twenty-five feet, I forget the distance, from the entrance, that the defect had been ascertained, and remedied, and that finally the mine had been exploded. So far as my recollection goes the mine was exploded about 4.40 or 4.45. At 5.45 a. m., one hour after the explosion of the mine, the following despatch was sent to General Burnside.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—5.40 a. m.

Major General BURNSIDE :

What news from your assaulting column ? Please report frequently.

GEO. G. MEADE,

Major General.

Official :

S. F. BARSTOW,

Assistant Adjutant General.

The following despatch was received from him, apparently in answer to mine, although, through a difference in time, it is dated before it :

BY TELEGRAPH FROM BATTERY MORTON,

5.40 a. m., dated July 30, 1864.

General MEADE :

We have the enemy's first line and occupy the breach. I shall endeavor to push forward to the crest as rapidly as possible.

A. E. BURNSIDE,

Major General.

P. S.—There is a large fire in Petersburg.

W. W. SANDERS,

Captain and A. D. C.

Official :

S. F. BARSTOW,

Assistant Adjutant General.

About this time, 5.45 or 5.50, (I see by reference to the despatch that it is 5.45,) an orderly came up to me, and delivered me a despatch which, upon opening, I found to be a despatch from Colonel Loring, inspector general of the 9th corps, written at the crater, and addressed to General Burnside, which despatch the orderly, not knowing where to find General Burnside, had brought to his old headquarters, where it found me. That despatch, so far as I recollect the purport of it, was to the effect that General Ledlie's troops occupied the crater, but in his (Colonel Loring's) opinion, he feared the men could not be induced to advance beyond. That despatch was telegraphed to General Burnside, and sent to him by an officer, so that I have no copy of it. That was the substance of it, however. It was shown to General Grant and General Humphreys, both of whom can give their recollection of it in confirmation of mine. It is an important matter to be taken into consideration here, that as early as 5.45 a. m. a despatch was placed in my hands stating that General Ledlie's troops could not be induced to advance.

In addition to that, the following despatch was sent to him :

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—5.40 a. m.

Major General BURNSIDE, *Commanding 9th Corps*:

The commanding general learns that your troops are halting at the works where the mine exploded. He directs that all your troops be pushed forward to the crest, at once. Call on General Ord to move forward his troops at once.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

Fearing there might be some difficulty on the part of General Burnside's troops, I thought it possible that by another corps going in on his right, encouragement might be given to his men, and a prompt assault might be made.

The next despatch I received was from an aide-de-camp, whom I had sent to General Burnside's headquarters to advise me of what was going on. It is dated 5.50, and is from Captain Sanders:

BY TELEGRAPH FROM HEADQUARTERS, 14-GUN BATTERY,

July 30, 1864—5.50 a. m.

Major General MEADE:

The 18th corps has just been ordered to push forward to the crest. The loss does not appear to be heavy. Prisoners coming in.

W. W. SANDERS,

Captain and C. M.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

The next despatch that I will read is one addressed to General Burnside, at 6 a. m.:

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—6 a. m.

Major General BURNSIDE:

Prisoners taken say there is no line in their rear, and that their men were falling back when ours advanced; that none of their troops have returned from the James. Our chance is now. Push your men forward at hazards—white and black—and don't lose time in making formations, but rush for the crest.

GEO. G. MEADE,

Major General, Commanding.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

Despatches were at this time also sent to Generals Ord and Warren. You can keep these dates in your mind.

The next despatch was received from Captain Sanders, at 6.10 a. m., as follows:

BY TELEGRAPH FROM HEADQUARTERS 14-GUN BATTERY,
July 30, 1864—6.10 a. m.

General MEADE :

General Burnside says that he has given orders to all his division commanders to push everything in at once.

W. W. SANDERS,
Captain and C. M.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

The following despatches are next in order :

HEADQUARTERS ARMY OF THE POTOMAC,
July 30—6.05 a. m., 1864.

Major General BURNSIDE, *commanding 9th Corps* :

The commanding general wishes to know what is going on on your left, and whether it would be an advantage for Warren's supporting force to go in at once.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

[Telegraph from headquarters 9th corps.]

Dated July 30—6.20 a. m., 1864.

Major General MEADE :

If General Warren's supporting force can be concentrated just now, ready to go in at the proper time, it would be well. I will designate to you when it ought to move. There is scarcely room for it now in our immediate front.

A. E. BURNSIDE,
Major General.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY POTOMAC,
July 30—6.50 a. m., 1864.

Major General BURNSIDE :

Warren's force has been concentrated, and ready to move since 3.30 a. m. My object in inquiring was to ascertain if you could judge of the practicability of his advancing without waiting for your column. What is the delay in your column moving? Every minute is most precious, as the enemy undoubtedly are concentrating to meet you on the crest, and if you give them time enough, you cannot expect to succeed. There is no object to be gained in occupying the enemy's line. It cannot be held under their artillery fire without much labor in turning it. The great point is to secure the crest at once, and at all hazards.

GEO. G. MEADE,
Major General.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

At seven a. m. Lieutenant General Grant put into my hand a despatch from Colonel Comstock, an officer whom he had sent to see the progress of operations :

[By telegraph from 5th army corps.]

JULY 30—7 a. m., 1864.

Lieut. General GRANT :

Several regiments of Burnside's men are lying in front of the crater, apparently, of the mine. In their rear is to be seen a line of battle of a brigade or more, under cover, and I think between the enemy's line and ours. The volley firing half ($\frac{1}{2}$) hour ago was from the enemy's works in Warren's front.

C. B. COMSTOCK,
Lieutenant Colonel.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

I read all these despatches over, that you may see how I was situated on the occasion, and what I knew of what was going on.

At 7.20, twenty minutes afterwards, I got the following despatch from General Burnside :

[Telegraph from headquarters 9th corps]

Received about 7.20 a. m., July 30, 1864.

General MEADE :

I am doing all in my power to push the troops forward, and, if possible, we will carry the crest. It is hard work, but we hope to accomplish it. I am fully alive to the importance of it.

A. E. BURNSIDE,
Major General.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

Upon the receipt of this despatch from General Burnside, informing me that it was hard work to take the crest, at the same time he not having reported to me that anybody had attempted to take it, or that any part of his force had made any effort to take it; with the despatches from my officers, the despatch from Colonel Loring, and the despatch from Colonel Comstock, to the effect that the troops were lying there, I came to the conclusion that possibly there might be some difficulty in getting the men to move forward, either from the enemy's fire, or some imaginary obstacle the troops had to encounter; that, as it was now 7 o'clock, and that the place had been occupied at 5.30, I began to suppose that there was some reason for the delay which had not been officially reported. I considered it natural that General Burnside would be indisposed to make it known, so long as he had hopes of overcoming the difficulty. To me, in my position as major general commanding the army, it was a matter of the utmost importance, because it was my intention during the assault, and before it, that if we could not carry the crest promptly by a coup-de-main, to withdraw the troops as quickly and safely as possible. Impressed with this view, and in order to get at the exact condition of affairs, and to justify General Burnside, if there was any reason of that kind, I addressed him the following despatch :

HEADQUARTERS ARMY OF THE POTOMAC,
7.30 a. m., July 30, 1864.

Major General BURNSIDE:

What do you mean by hard work to take the crest? I understand not a man has advanced beyond the enemy's line which you occupied immediately after exploding the mine. Do you mean to say your officers and men will not obey your orders to advance, if not, what is the obstacle? I wish to know the truth, and desire an immediate answer.

GEO. G. MEADE,
Major General.

Official:

S. F. BARSTOW,
Assistant Adjutant General.

It is proper to say, that immediately after sending that despatch, and before receiving General Burnside's answer, I received a report verbally from Captain Sanders, that an attempt had been made to make an attack on the right, I think by General Griffin, and that he had been repulsed. I immediately sent another despatch to General Burnside at 8 a. m., as follows:

HEADQUARTERS ARMY OF THE POTOMAC,
July 30—8 a. m., 1864.

To Major General BURNSIDE:

Since writing by Captain Jay, Captain Sanders has come in and reported condition of affairs. He says Griffin has advanced and been checked; this modifies my despatch. Still I should like to know the exact morale of your corps. Ord reports he cannot move till you get out of the way. Can't you let him pass out on your right, and let him try what he can do?

GEO. G. MEADE,
Major General.

Official:

S. F. BARSTOW,
Assistant Adjutant General.

To the first of these two despatches, subsequent to sending the second, I received this reply:

HEADQUARTERS 9TH CORPS, BATTERY MORTON,
About 7.35 a. m., July 30, 1864.

General MEADE:

Your despatch by Captain Jay received. The main body of General Potter's division is beyond the crater. I do not mean to say that my officers and men will not obey my orders to advance; I mean to say that it is very hard to advance to the crest.

I have never in any report said anything different from which I conceived to be the truth; were it not insubordinate, I would say that the latter remark of your note was unofficerlike and ungentlemanly.

Respectfully, yours,

A. E. BURNSIDE,
Major General.

Official:

S. F. BARSTOW,
Assistant Adjutant General.

The next despatch that I received was one from Colonel Comstock, about the same time, 8 a. m.:

[By telegraph from 5th army corps.]

8 a. m., July 30, 1864.

To Lieutenant General GRANT:

About a brigade more of our men has moved up to the crater, and then filed off to the right along the enemy's line; they are still moving to the right.

C. B. COMSTOCK,

Lieutenant Colonel and Aide-de-Camp.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

The next despatch I received was one dated 8.45 a. m., from Captain Sanders:

[By telegraph from headquarters 9th army corps.]

8.45 a. m., July 30, 1864.

To General MEADE:

One gun has just been taken out of the mine, and is now being put in position. Have not heard anything from the attack made from the left of mine. One (1) set of colors just sent in, captured by the negroes.

W. W. SANDERS,

Captain and Aide-de-Camp.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

At 9 a. m. I received the following despatch from General Burnside:

[By telegraph from headquarters 9th army corps.]

9 a. m., July 30, 1864.

General MEADE:

Many of the ninth (9th) and eighteenth (18th) corps are retiring before the enemy. I think now is the time to put in the fifth (5th) corps promptly.

A. E. BURNSIDE,

Major General.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

That was the first information I had received that there was any collision with the enemy, or that there was any enemy present. At 9.30 a. m. the following despatch was sent to General Burnside:

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—9.30 a. m.

Major General BURNSIDE, *commanding 9th Corps:*

The major general commanding has heard that the result of your attack has been a repulse, and directs that if, in your judgment, nothing further can be effected, that you withdraw to your own line, taking every precaution to get the men back safely.

A. A. HUMPHREYS,

Major General and Chief of Staff.

General Ord will do the same.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. F. BARSTOW,

Assistant Adjutant General

Then I received the following despatch from Captain Sanders :

[By telegraph from headquarters 9th army corps.]

9 a. m., July 30, 1864.

To Major General MEADE :

The attack made on right of mine has been repulsed. A great many men are coming to the rear.

W. W. SANDERS,
Captain and C. M.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

The next despatch was this, from Colonel Comstock :

[By telegraph.]

HEADQUARTERS 5TH ARMY CORPS,
July 30, 1864—9.35 a. m.

To Lieutenant General GRANT :

I cannot see that we have advanced beyond the enemy's line in the vicinity of the mine. From here, it looks as if the enemy were holding a line between that point and the crest.

C. B. COMSTOCK,
Lieutenant Colonel and Aide-de-Camp.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

The next despatch to General Burnside, at 9.45, was the preemptory order to withdraw :

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 9½ a. m., 1864.

To Major General BURNSIDE, *Commanding 9th Corps :*

The major general commanding directs that you withdraw to your own intrenchments.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

Receiving information from some person—I don't know who it was—that there was some difficulty about withdrawing at that time, that the safety of the column might be jeopardized by undertaking to withdraw it, the following despatch was sent to General Burnside, and also to General Ord, who had troops there at that time. None of my despatches to General Ord have been presented yet, because it would have confused matters. I will read them hereafter :

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 10 a. m., 1864.

Major Generals BURNSIDE and ORD :

You can exercise your discretion in withdrawing your troops now or at a later period, say to-night. It is not intended to hold the enemy's line which you now occupy any longer than is required to withdraw safely your men.

GEO. G. MEADE,
Major General.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

About that time, both Major General Burnside and Major General Ord came to the headquarters where General Grant and myself were temporarily located. General Burnside seemed to be very much displeased at the order of withdrawal, and expressed the opinion that if allowed to remain there, by nightfall he could carry that crest. As, however, he did not give any reason to show how he could take it, and as he had been from half past five in the morning till nearly ten, and not only had not taken it, but had his men driven out of the works he had been occupying, and as Major General Ord, whose troops were also there, upon being asked if the crest could be carried, answered very positively that it was entirely out of the question, it was determined by the Lieutenant General commanding and myself, or rather I referred the matter to him, to know if he desired the orders changed; it was determined that no further attempt should be made to take the crest, but that the men should be withdrawn whenever that could be done with security.

There is now a very important point to which I will call the attention of the court, and which I want investigated very thoroughly, and that is the withdrawal from the crater.

At the time the order was given to withdraw the troops, the report of Major General Ord was, that the crater of the mine was so overcrowded with men that it would be nothing but murder to send any more men forward there. I do not recollect as to whether the report of Major General Burnside was so definite, but I believe the report of Colonel Loring was that there was at least one division of the troops in there. The impression left upon my mind was that at that time there were as many men in the crater as would enable them to defend themselves if attacked, and in case no defence was necessary there was no occasion on my part to order troops to be sent there. I presumed that Major General Ord and Major General Burnside, having charge of that operation, would see that the men would be properly withdrawn.

This conclusion having been arrived at by the Lieutenant General and myself, and it not appearing necessary that we should remain any longer at Major General Burnside's headquarters, the Lieutenant General commanding withdrew to City Point and I withdrew to my former headquarters, where I was in telegraphic communication with Major General Burnside, and where, under the common correspondence between a general officer commanding the army and his subordinates, not to say under a peculiar exigency, I expected to be informed of anything that should occur. I remained in total ignorance of any further transactions until about six or seven o'clock in the evening. About that hour a report, or a rumor, reached me that there were a number of our wounded men lying between the crater and our line, and I think an appeal was made to me by General Ord if something could not be done to remove these men. I was not aware that there was any difficulty in the way of removing them, and wondered why they had not been removed, presuming that our men were in the crater, and as no report had been made to me that they had been withdrawn, I directed a despatch to be sent to Major General Burnside, calling upon him for information. That despatch read as follows :

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—7.40 p. m.

Major General BURNSIDE, *Commanding 9th Corps* :

The major general commanding desires to know whether you still hold the crater; and if so, whether you will be able to withdraw your troops from it safely to-night; and also to bring off the wounded. The commanding general wishes to know how many wounded are probably lying there. It will be recollected that on a former occasion General Beauregard declined to enter into any

arrangement for the succor of the wounded and the burial of the dead lying under both fires : hence the necessity of immediate and active efforts for their removal in the present case.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

You will remember that I left General Burnside's headquarters about 10 o'clock, with the understanding that the troops were to be withdrawn when they could be withdrawn with security.

The following despatches were subsequently read by the witness :

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—10.35 p. m.

Major General BURNSIDE, *Commanding 9th Corps :*

The major general commanding desires to know whether you have any wounded left on the field ; and directs me to say that he is awaiting your reply to the despatch of 7.40 p. m.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 31, 1864—8.40 a. m.

To Major General BURNSIDE, *Commanding 9th Corps :*

The major general commanding directs me to call your attention to the fact that you have made no report to him upon the condition of affairs in your front since he left your headquarters yesterday, and that you have made no reply to the two special communications upon the subject sent you last night at 7.40 p. m., and at 10.40 p. m.

I am also directed to inquire into the cause of these omissions.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM HEADQUARTERS, 9TH CORPS,
July 31, 1864—9 a. m.

Major General HUMPHREYS :

Your despatch was received just as I was making out a report of our casualties. I have used every means to get something like accurate reports, but it has been difficult.

The rumors are very numerous and exaggerated. I will send report by messenger. The order to retreat caused great confusion, and we have lost largely in prisoners.

General Ord's men on our lines were not relieved.

A. E. BURNSIDE, *Major General.*

Official :

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM HEADQUARTERS, 9TH CORPS,

July 31, 1864—6.40 p. m.

Major General HUMPHREYS:

The loss in this corps in the engagement of yesterday amounts to about 4 500; the great proportion of which was made after the brigade commanders in the crater were made aware of the order to withdraw.

A. E. BURNSIDE, *Major General.*

Official:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,

July 31, 1864—7.20 p. m.

Major General BURNSIDE, *Commanding 9th Corps:*

Your despatch relative to the loss in your corps yesterday is received.

The commanding general requests that you will explain the meaning of the latter part of your despatch, and again reminds you that he has received no report whatever from you of what occurred after 11 a. m. yesterday.

A. A. HUMPHREYS.

Major General and Chief of Staff.

Official:

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM 9TH CORPS,

July 31, 1864—9.10 p. m.

Major General HUMPHREYS, *Chief of Staff:*

Your despatch of 7.20 p. m. received. Just before the order for withdrawal was sent in to the brigade commanders in the crater, the enemy made an attack upon our forces there and were repulsed with very severe loss to the assaulting column. The order for withdrawal, leaving the time and manner of the execution thereof to the brigade commanders on the spot, was sent in, and while they were making arrangements to carry out the order the enemy advanced another column of attack. The officers knowing they were not to be supported by other troops, and that a withdrawal was determined, ordered the men to retire at once to our old line. It was in this withdrawal, and consequent upon it, that our chief loss was made. In view of the want of confidence in their situation, and the certainty of no support, consequent upon the receipt of such an order, of which moral effect the general commanding cannot be ignorant, I am at a loss to know why the latter part of my despatch requires explanation.

A. E. BURNSIDE, *Major General.*

Official:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,

July 31, 1864—9½ p. m.

Major General BURNSIDE, *Commanding 9th Corps:*

Your despatch explanatory of that in relation to the loss in your corps yesterday is received.

The major general commanding directs me to say that the order for withdrawal did not authorize or justify its being done in the manner in which, judg-

ing from your brief report, it appears to have been executed, and that the matter shall be investigated by a court.

The major general commanding notices that the time and manner of withdrawal was left to the brigade commanders on the spot. He desires to know why there was not a division commander present where several brigades were engaged, and by whom the withdrawal could have been conducted.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

So far as any information from General Burnside is concerned, I had to go to bed that night without knowing whether his troops were in the crater, or whether they were not. During the night despatches were received, referring to the relief of General Ord's troops next morning, July 31, at 8.40 and 9 a. m. The despatches 18½ and 18¾ were sent and received by General Humphreys. No despatch was received from General Burnside with reference to the withdrawal of these troops till 6.40 p. m., July 31, (marked 18¾,) to which was sent the one marked 19, at 9.10 p. m., July 31. The despatch was received from General Burnside marked 19½, and the reply marked 20 was sent. Now, I beg leave to call the attention of the court to the fact that this despatch is dated 9.10 p. m., July 31, and although it does not give an official statement of the time of the withdrawal of the troops, I know, but only from other information, that the withdrawal was at about 2 p. m., July 30. And as I consider that my conduct is here the subject of investigation as much as that of any other officer or man engaged in this enterprise, I wish to repudiate, distinctly, any responsibility resting upon me for the manner of the withdrawal, beyond the orders I gave to the effect that the troops were to be withdrawn when they could be withdrawn with security; and if they had been able to repulse an attack of the enemy, it seems to me rather extraordinary that when another attack was threatened after the success, that they should be withdrawn simply because they were threatened with another attack. But that is the point to which I wish to call the attention of the court, and which I wish to have thoroughly investigated.

I believe these constitute the sum and substance of all the orders that passed between myself and Major General Burnside. But I respectfully submit to this court that so far as it was in my power as the commanding general of this army to give orders, I anticipated the difficulties that occurred, and endeavored to avoid them as much as I could do so, and that I cannot be held responsible for the failure which afterwards resulted.

Having finished my correspondence with and orders to General Burnside, I now propose to read the correspondence with and orders to General Ord, who was the officer commanding the force next to be employed after those of General Burnside, and whose movements it is important to know.

Major General Ord was directed to relieve his corps by General Mott's division of the 2d corps on the evening of the 29th. He was then to move and mass his troops in rear of the 9th corps, and it was intended that he should support the 9th corps whenever the 9th corps had effected a lodgment on the crest; that he was promptly to move up to them and support them on the crest. I had several interviews with General Ord on the 28th and 29th. I went with him and showed him the position; showed him exactly the ground; gave him all the information I had, and also caused him to send staff officers to select positions for the troops, so that when it became dark they might know the roads. On the morning of July 30, when it became evident to my mind that General Burnside's troops were not going to advance further than the crater, and when I had

reason to suppose it was owing to some difficulty on the part of the troops themselves, and, so far as any official report came to me, rather than obstacles presented by the enemy, I sent a despatch to General Ord, changing his previous orders and directing him instead of supporting General Burnside to make an assault independent of General Burnside. That despatch and subsequent despatches are as follows :

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 9½ p. m., 1864.

Major General ORD, *Commanding 18th Corps* :

Your despatch of 9.25 p. m. is received. The commanding general does not consider it necessary for General Burnside to wait for your troops to relieve his in the trenches. General Burnside can form his troops for the assault without reference to yours, and your troops can file into the trenches at any time after they are vacated. General Burnside is telegraphed to that effect.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 4.50 a. m., 1864.

Major General ORD, *Commanding 18th Corps* :

General Burnside is ordered, if his mine has failed, to open all his batteries and assault at once. You will consider the orders the same as if the mine had exploded and the assault made in consequence.

A. A. HUMPHREYS,
Major General, Chief of Staff.

(Just before this was finished the mine exploded and the batteries opened. It was not sent.—A. A. H.)

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 6 a. m., 1864.

Major General ORD, *Commanding 18th Corps* :

The major general commanding directs that you at once move forward your corps rapidly to the crest of the hill, independently of General Burnside's troops, and make a lodgment there, reporting the result as soon as attained.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

[By telegraph from headquarters 9th army corps.]

JULY 30, 8 a. m., 1864.

To General MEADE :

General Turner in my front reports that the only place I can get out of the line is opposite the crater. It is already full of men who cannot develop. I

shall put in my column as soon as I can. It is impossible, by reason of the topography, to charge in the manner you indicate. I must go in by head of column, and develop to the right. This is reply to orders from General Meade to push for crest of hill regardless of General Burnside's troops. General Ames makes similar reports.

E. O. C. ORD,
Major General.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 9 $\frac{3}{4}$ a. m., 1864.

Major General ORD, *Commanding 18th Corps:*

The major general commanding directs that you withdraw your corps to the rear of the 9th corps, in some secured place.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 10 a. m., 1864.

Major Generals BURNSIDE and ORD:

You can exercise your discretion in withdrawing your troops now or at a later period, say to-night.

It is not intended to hold the enemy's line which you now occupy any longer than is required to withdraw safely your men.

GEORGE G. MEADE,
Major General.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

There were some other despatches to General Ord of a similar character, (but I do not see them here,) to endeavor to get him forward independent of the ninth corps, to make an isolated attack, an attack of his own, independent of the ninth corps. Owing to the obstacles presented—the fact that there was no proper *de-bouche* for our troops to that portion of the enemy's line, and the fact that the crater was overcrowded with men—General Ord, considering those obstacles insurmountable, confined his operations to sending forward, I think, only one brigade. But General Ord and his division commanders have made reports, which will be placed before you. I forgot to bring them with me to-day.

At about 9.45 a. m. the same orders were sent to General Ord as to General Burnside, with reference to the withdrawal of the troops. That finishes all that passed between General Ord and myself.

The other supporting column was under Major General Warren on the left.

In the original order General Warren was directed to mass his available troops on the right of the line, and to make all his preparations to support General Burnside in the assault wherever he should be ordered.

At 4.40 a. m. the following despatch was sent to him :

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 4.40 a. m., 1864.

Major General WARREN, *Commanding 5th Corps* :

General Burnside is directed, if his mine has failed, to open all his batteries and assault. Upon hearing his batteries open you will open all in your front.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

At 5.50, one hour afterwards, and immediately after my receiving the information that General Burnside's corps occupied the crater, the following despatch was sent to him :

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 5.50 a. m., 1864.

Major General WARREN, *Commanding 5th Corps* :

General Burnside is occupying the crater with some of his troops. He reports that no enemy is seen in their line. How is it in your front? Are the enemy in force there or weak?

If there is apparently an opportunity to carry their works, take advantage of it and push forward your troops.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. F. BARSTOW,

Assistant Adjutant General.

I wish to call the attention of the court to the fact that as early as 5.50 I authorized General Warren, if he saw any opportunity of doing anything with his corps, not only in support of General Burnside but as an independent operation of his own, that he should take advantage of it and push forward his troops. His reply, dated 6 a. m., is as follows :

[By telegraph from 5th army corps.]

July 30, 6 a. m., 1864.

To Major General HUMPHREYS :

Your despatch just received. It is difficult to say how strong the enemy may be in my front. He has batteries along the whole of it. I will watch for the first opportunity. I can see the whole line where I am. The enemy has been running from his first line in front of General Burnside's right for some minutes, but seem to be a very heavy line of troops just behind it in high breastwork. There is a battery in front of General Burnside's left which fires towards the river, the same as it did on the 18th of June, and which our artillery fire has but very little effect on.

G. K. WARREN,

Major General.

Official copy:

S. F. BARSTOW,

Assistant Adjutant General.

At 6.15 a. m., another despatch was received from him as follows :

[By telegraph from headquarters 5th army corps.]

July 30, 6.15 a. m., 1864.

To Major General HUMPHREYS:

I have just received a report from my line on the centre and left. The enemy opened with musketry when our firing commenced, but our own fire kept down, and also that of all their artillery except in the second line on the main ridge, from which they fire a little. Major Fitzhugh of the artillery is badly wounded by a musket ball in the thigh. None of the enemy have left my front that we can see.

G. K. WARREN,
Major General.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

Then at 6.20 another despatch, No. 29, came from General Warren, in which he states that what we thought was a heavy line of the enemy behind the line occupied by Burnside's troops, as the sunlight comes out and the smoke clears away, proves to be our own troops in the enemy's position.

[By telegraph from 5th army corps.]

July 30, 6.20 a. m., 1864.

To Major General HUMPHREYS :

What we thought was the heavy line of the enemy behind the line occupied by General Burnside, proves, as the sunlight comes out and the smoke clears away, to be our own troops in the enemy's position.

G. K. WARREN,
Major General.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

You will perceive that at 5.40 I authorized General Warren and directed him to make an attack without waiting for the support of General Burnside, that is if circumstances would justify his making an attack ; and that his replies here indicate that no such attack was practicable. Coming to that conclusion and receiving information from the signal officers that the enemy had left their extreme right, which I presumed they would do, to mass on the centre to receive our attack, the following despatch was sent to General Warren at half past six o'clock :

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 6.30 a. m., 1864.

Major General WARREN, *Commanding 5th Corps :*

The signal officer reports that none of the enemy's troops are visible in their works near the lead works. The commanding general wishes, if it is practicable, that you make an attack in that direction. Prisoners say there are but three divisions in the works and but one line of intrenchments thinly filled with their troops.

A. A. HUMPHREYS,
Major General and Chief of Staff.

A despatch just going to Wilson to make a lodgment on the Weldon railroad and move up along it to the enemy's right flank.

Official copy :

F. S. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS FIFTH ARMY CORPS,
July 30, 6.40 a. m., 1864.

General HUMPHREYS :

I have all my troops on my right except General Crawford. I have sent him your despatch with directions to do whatever he can on the left with Baxter's brigade and half of Leslie's.

Do you mean for me to move Ayres in that direction ? The enemy have a 30 pounder battery on the main ridge in my front behind their first line. We cannot make out what his second line is.

Respectfully,

G. K. WARREN,
Major General.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 7 a. m., 1864.

Major General WARREN, *Commanding 5th Corps :*

What about attacking the enemy's right flank near the lead works with that part of your force nearest to it ?

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :

S. T. BARSTOW,
Assistant Adjutant General.

The next despatch in order is the following, dated 7.30 a. m., to General Warren :

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 7½ a. m., 1864.

Major General WARREN, *Commanding 5th Corps :*

Your despatch respecting attacking the enemy's extreme right received. The general commanding will await General Crawford's reconnoissance before determining whether you should send Ayres also in that direction.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

General Ayres still remained on the right, and the orders still existed to do anything with him that could be done to advantage. At 7.50 a. m. we have the next despatch from General Warren :

HEADQUARTERS 5TH ARMY CORPS,
July 30, 7.50 a. m.

Major General HUMPHREYS :

I have just returned from the scene of General Burnside's operations. In my opinion the battery of one or two guns to the left of General Burnside should be

taken before attempting to seize the crest. It seems to me it can be done, as we shall take the infantry fire quite obliquely. This done the advance upon the main hill will not be difficult. I think it would pay you to go to General Burnside's position. You can see in a moment, and it is as easy to communicate with me as by telegraph.

It will be some time before we can hear from Crawford.

Respectfully,

G. K. WARREN, *Major General.*

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

Nothing further was received while we awaited developments from General Crawford until 8 a. m., when the following despatch was received from General Warren :

BY TELEGRAPH FROM HEADQUARTERS 5TH ARMY CORPS,
8 a. m. July 30, 1864.

Major General HUMPHREYS :

I sent your despatch to General Crawford with directions to do what he could. He says the lead works are over a mile from the angle of my picket line. I do not think an attack upon the enemy's works at or near that point at all practicable. With the force I can spare, I can make a demonstration if it is desired; the cavalry are moving and I will have my left uncovered. He sent word he will await further orders. He is so far off that I do not think it well to wait for anything more he can do, and I renew my suggestion that you take a look at things from General Burnside's headquarters and direct me either to go in with Burnside or go around to my left with Ayres's division and I do the other thing.

G. K. WARREN, *Major General.*

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

Notwithstanding that it was considered that General Warren's original order authorized him to take the batteries if it could be done, inasmuch as he was directed to move and attack with General Crawford, and as it was suggested that General Ayres might be required, it was thought proper to send him the following order at 8½ a. m. :

HEADQUARTERS ARMY OF THE POTOMAC,
8½ a. m. July 30, 1864.

Major General WARREN, *Commanding 5th Corps :*

Your despatch is received. The major general commanding directs that you go in with Burnside, taking the two gun battery. The movement on the left need not be carried further than reconnoissance to see in what force the enemy is holding his right. The cavalry are ordered to move up on your left and to keep up connection.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

At 9.15 a. m. the following despatch was received from General Warren :

BY TELEGRAPH FROM HEADQUARTERS 5TH ARMY CORPS,
9.15 a. m., July 30, 1864.

Major General HUMPHREYS :

Just before receiving your despatch to assault the battery on the left of the crater occupied by General Burnside, the enemy drove his troops out of the place and I think now hold it. I can find no one who knows for certainty or seems willing to admit, but I think I saw a rebel battle-flag in it just now and shots coming from it this way. I am therefore, if this is true, no more able to take the battery now than I was this time yesterday. All our advantages are lost. I await further instructions, and am trying to get at the condition of affairs for certainty.

G. K. WARREN, *Major General.*

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

At this time the conclusion had been arrived at by the Lieutenant General Commanding and myself that the affair was over, and that nothing more could be done ; and soon afterwards, orders similar to those which were sent to others were sent to General Warren, that he should not make any attempt to take the two gun battery. The following despatches were sent to General Warren :

HEADQUARTERS ARMY OF THE POTOMAC,
9.25 a. m. July 30, 1864.

Major General WARREN :

The attack ordered on the two gun battery is suspended.

GEO. G. MEADE, *Major General.*

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM HEADQUARTERS 5TH CORPS,
July 30, 1864—9.45 a. m.

Major General HUMPHREYS, *Chief of Staff:*

GENERAL: I find that the flag I saw was the enemy's, and that they have reoccupied all the line we drove them from, except a little around the crater which a small force of ours still hold.

Respectfully,

G. K. WARREN,
Major General.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—9.45 a. m.

General WARREN, *at 9th Corps Headquarters:*

A despatch has been sent to your headquarters, rescinding order to attack ; all offensive operations are suspended. You can resume your original position with your command.

GEORGE G. MEADE.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—5 p. m.

Major Generals WARREN AND BURNSIDE:

Signal officers report the enemy returning rapidly from the north side of the James. Every preparation should be made to strengthen the line of works where any obstacles have to-day been removed. The lines should be held strongly with infantry and artillery, posted wherever practicable—available reserves held in hand ready for movement in case it becomes necessary. I anticipate offensive movements on the part of the enemy, and expect it will be by a movable column, turning our left and threatening our rear.

GEORGE G. MEADE,
Major General Commanding.

Major General Hancock will, to-night, resume his former position and General Ord his also.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

These are all the orders and communications that passed between General Warren and myself. He was authorized to attack, if he could see a good chance to attack; when he reported no chance to attack, and was asked what force he had available, he reported that he had no force available except he moved Ayres; he was directed not to move Ayres until information was received from Crawford; only, if he could attack the two gun battery in his front, he was ordered to attack it, and then the operations were subsequently suspended.

Now I have read you the communications that passed between myself and General Grant, myself and General Burnside, myself and General Ord, and myself and General Warren. It now remains for me to read the communications that passed between myself and General Hancock, and myself and General Mott.

The first was a communication sent at 4.40 a. m. to General Mott.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—4.40 a. m.

Brigadier General MOTT, *Commanding Division in Intrenchments of 18th Corps, Old Headquarters of 18th Corps:*

General Burnside is ordered, if his mine has failed, to open all the batteries on his front and assault at once.

Upon hearing his batteries open, have all the batteries of the 18th corps opened.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official:

S. F. BARSTOW,
Assistant Adjutant General.

At 4.50 a. m. the following despatch was sent to the telegraph operator at the headquarters of the 18th corps:

HEADQUARTERS ARMY OF THE POTOMAC,

July 30—4.50 a. m.

OPERATOR at Headquarters 18th Corps:

Send the following message by orderly to General Hancock:

Major General HANCOCK, *Commanding 2d Corps*:

The commanding general wishes you to be about the headquarters of the 18th corps, so that he can communicate with you at any time.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official:

S. F. BARSTOW,
Assistant Adjutant General.

The following despatch, dated July 30, 6 a. m., was sent to General Hancock, after the mine was occupied:

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—6 a. m.

Major General HANCOCK, *Commanding 2d Corps*:

The major general commanding directs me to say that General Burnside reports the enemy's line in his front abandoned, and the prisoners taken say that there is no second line. The commanding general may call on you to move forward at any moment, and wishes you to have your troops well up to the front prepared to move. Do the enemy's lines in front of Mott's division appear to be thinly occupied, and is there any chance to push forward there?

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

The following despatches were sent and received:

BY TELEGRAPH FROM HEADQUARTERS 2D ARMY CORPS,

July 30, 1864—6 a. m.

Major General HUMPHREYS:

It is not possible to say about the line in front of General Mott, as both keep down firing whenever a head is shown. General Ord left word for me by General Mott that there was no place to assault here, as the line was not only protected by abattis but by wire. This was the decision of himself and his division commanders, and he requested General Mott so to inform me. I know nothing more about it. I will be prepared for your orders.

W. S. HANCOCK.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM HEADQUARTERS 2D CORPS,

July 30, 1864—6.20 a. m.

Major General HUMPHREYS, *Chief of Staff*:

I have sent out to have General Mott's line examined as far as practicable, to see how strong the enemy appear to hold their line in General Mott's front.

W. S. HANCOCK.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM HEADQUARTERS 2D CORPS,
6.30 a. m., July 30, 1864.

Major General HUMPHREYS :

I have directed General Mott to advance a skirmish line to see whether the enemy hold a strong line in his front.

W. S. HANCOCK,
Major General.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM HEADQUARTERS 2D CORPS,
6.50 a. m., July 30, 1864.

General GEO. G. MEADE :

The brigade next to General Burnside's attempted an advance of a skirmish line just now and lost the officer in command of the line and several men in getting over the parapet. The enemy's mortars are at work, but they cannot fire much artillery other than this. The other brigades have not yet been heard from. Your despatch is just received. I will continue to watch the enemy in my front.

W. S. HANCOCK,
Major General.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
7 a. m., July 30, 1864.

Major General HANCOCK :

The report from prisoners would indicate weakness in the enemy's line, that a considerable portion has been vacated.

If Burnside and Ord gain the crest, the enemy cannot hold in your front, for they will be open to attack from front and rear. It was to take advantage of this contingency that I wanted you to have your troops in hand.

The orders to Mott are all right. If the enemy are in force and prepared, you will have to await developments; but if you have reason to believe their condition is such that an effort to dislodge them would be successful, I would like to have it made. Burnside now occupies their line, but has not pushed up to the crest, though he reports he is about doing so.

GEO. G. MEADE.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM HEADQUARTERS 2D CORPS,
7 a. m., July 30, 1864.

General HUMPHREYS, *Chief of Staff* :

Report from 2d brigade General Mott's division shows that the enemy are there in some strength, having two batteries which they fire seldom, owing to the close proximity of our riflemen. The commanding officer of the brigade says he can see every man who leaves his front to their right, and none have left since daylight. He is using mortars effectively. I will report any change of troops.

W. S. HANCOCK,
Major General.

Official copy :

S. F. BARSTOW,
Assistant Adjutant General.

BY TELEGRAPH FROM HEADQUARTERS 2D ARMY CORPS,
9 a. m., July 30, 1864.

Major General HUMPHREYS:

General Mott's remaining brigade deceived the enemy in their front by putting their hats on rammers above the parapet, which elicited quite a spirited volley.

W. S. HANCOCK,
Major General.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
9.25 a. m., July 30, 1864.

Major General HANCOCK:

Offensive operations have been suspended. You will for the present hold in force the lines held by the 18th corps. Make your dispositions accordingly.

GEO. G. MEADE,
Major General Commanding.

Official:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—10 a. m.

Brigadier General WILSON, *Comd'g 3d division cavalry:*

The major general commanding directs that you concentrate your division on the left, somewhere near the plank road, and hold its available force ready for prompt movement.

The guard left with trains should be merely sufficient to protect them against any small irregular parties of the enemy. The dismounted men should form this guard. Please report your location as soon as established.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Major General and Chief of Staff.

P. S.—The patrols and pickets on the north side of the Blackwater should be reduced to the minimum consistent with watching the main avenues of approach.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—2½ p. m.

Brigadier General WILSON,
Comd'g cavalry division, Jordan's Point:

The commanding general considers that not more than one regiment should remain north of the Blackwater, and that be so posted as to be brought in rapidly to-morrow morning.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—3½ p. m.

Brigadier General WILSON, *comd'g 3d division cavalry corps*:

GENERAL: Major General Sheridan is ordered to move at dark to Lee's mill, and at daylight against the enemy's troops defending Petersburg on their right, by the roads leading to that town from the southward and westward.

Your division will accompany him, and the commanding general directs that you be prepared to call in your patrols and pickets early to-morrow morning and move with the cavalry corps. You will send a staff officer to meet General Sheridan and receive his instructions.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—10 p. m.

Major General SHERIDAN:

The commanding general directs that you keep up connexion with our left, in the operations of to-morrow.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official copy:

S. F. BARSTOW,
Assistant Adjutant General.

These include the despatches sent to the cavalry. I would explain that the separate orders to General Wilson were issued because General Sheridan was across the James river, at Deep Bottom, with two divisions, and I had to issue separate orders to General Wilson, so that he might be ready for the movement next day.

Here are some despatches which are of no particular consequence, but I will introduce them here. They are despatches from the signal officers, indicating the movements of the enemy:

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—3 p. m.

Brigadier General WHITE,
Commanding (temporary) Division, 9th Corps:

The major general commanding directs that, as soon as it is dark, you withdraw your command from the intrenchments you are now holding, and move to the position of the 9th corps, and report to your corps commander. You will call in your pickets upon moving.

You will at once report to Major General Burnside, and receive his instructions as to the route you will take.

Very respectfully, &c.,

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—4.45 a. m.

Colonel WAINWRIGHT, *Chief of Artillery 5th Corps* :

General Burnside is directed, if his mine has failed, to open all his batteries on his front and assault at once. Upon hearing his batteries open, those of the 5th corps will open also.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

PLANK ROAD SIGNAL STATION,

July 30, 1864—5 a. m.

Major B. F. FISHER :

There are no tents or the sign of any force on the right of the enemy's line near lead works.

The two batteries directly in front of station, which opened heavily this morning, have ceased firing.

A large building is burning in the city.

I have seen no movement of the enemy's troops.

J. B. DUFF,
Lieutenant, Signal Officer.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

[By telegraph from Plank Road Signal Station.]

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—6.20 a. m.

Major FISHER :

The enemy's infantry has been passing to our right for twenty minutes ; first noticed them at a point due west of the station marching in rear of their line ; they came out in plain view at a point northwest from station. The column was at least a strong brigade ; all the camps one-quarter mile of lead works have been broken up ; the largest visible from station has just been broken up and the troops moved to our right.

J. B. DUFF, *Signal Officer.*

Official :

S. F. BARSTOW,
Assistant Adjutant General.

[By telegraph from 5th Corps.]

JULY 30, 1864.

Major FISHER :

The enemy are wholly concealed along the line in view of this station. Not one has been seen ; only three guns, and those in redoubts at Gregor House. Reply to us.

Copy sent to General Warren.

S. LYON, *Lieutenant.*

Official :

S. F. BARSTOW,
Assistant Adjutant General.

It was on these reports of the signal officers that General Warren's orders were predicated.

The following is the report of the chief of engineers :

HEADQUARTERS ARMY OF THE POTOMAC,
Office of Engineers, August 5, 1864.

SIR: In compliance with directions received from you to-day, I have the honor to make the following report of the duty performed by the engineer officers during the assault of July 30.

In compliance with directions from the chief of staff, I detailed an officer of engineers for duty with each corps that was ordered to take part in the attack on the 30th of July.

Major Michler, who was charged with selecting the position of the column on the right, after having reconnoitred the position, reported to General Ord, and was informed that his subordinate generals had already examined the position, were thoroughly acquainted with the ground, and required no further assistance. They had already determined to take the same position indicated by Major Michler. Two engineer officers belonging to the 18th corps accompanied the movement.

Lieutenant Benyaurd, engineer, who has been on duty on the 9th corps front, reported to General Burnside and remained with him during the whole affair.

After having consulted with the commanding general of the 5th corps as to the direction his column would take, I proceeded to the batteries in front of that corps and assisted Colonel Abbott in directing their fire so as to silence that of the enemy against the assaulting column. I then repaired to the right of his line. By this time, however, the attack had been abandoned and my services were no longer required.

Very respectfully,

J. C. DUANE, *Major Engineers.*

Brigadier General S. WILLIAMS,

Assistant Adjutant General Army of the Potomac.

Official :

S. F. BARSTOW, *A. A. G.*

I believe I have now read every despatch that I have received, and the court are fully aware of all the information that I received on the ground.

GENERAL MEADE. I would state that in the general orders issued on the night previous to the assault the cavalry was ordered to make this attack on the left. Two divisions of the cavalry corps were over at Deep Bottom. They could not cross the river until after the second corps had crossed, so that it was late in the day before they came up. Indeed, the head of the column did not appear before the offensive operations were suspended. As General Wilson had been ordered to be in readiness, however, and in view of the unavoidable delay of Sheridan, orders were sent to General Wilson not to wait for General Sheridan, but to push on himself to the Weldon railroad and make an assault upon the enemy. No report was received from General Sheridan. General Sheridan was sick. General Gregg reported in the evening that he had advanced his cavalry, and that they had found the enemy in force at Reams's station, at Gurley's house, and at various other points along the railroad. There was no attack made by the cavalry except at Lee's mills, where General Gregg, encountering cavalry, drove them away to water his horses.

When it was known that our offensive operations were suspended, orders were sent to the cavalry that they should push on as far as possible and find out the enemy's position; but the original orders about going into town were modified, inasmuch as the operations in our immediate front were suspended.

I desire to say to the court that it has not been my disposition or intention to throw censure upon anybody for the unfortunate failure; that, indeed, I have not been furnished with the necessary information to enable me to do so. I have not yet received Major General Burnside's, or his subordinate commanders', official reports. I have very little knowledge of what actually transpired except from the despatches you have heard read here. I have been groping in the dark since the commencement of the attack. I did not wish to take any unpleasant measures, but I thought it my duty to suggest to the President of the United States that this matter should be investigated, and that the censure should be made to rest upon those who are entitled to it. What I have done has been to show that I tried to do all I could to insure success.

FOURTH DAY.

COURT ROOM, HEADQUARTERS 2D CORPS,

August 10, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

There were also present Generals Ferrero, Potter, and Wilcox, of the 9th corps, General Mott, of the 2d, and General Carr, of the 18th.

The proceedings of the third day were read and approved.

Testimony of General Meade continued.

Questions by General Burnside.

Question. Where were your headquarters during the action of the 30th?

Answer. From four o'clock until about eleven—I am not exactly confident as to the time of leaving it—my headquarters, as announced in the order of battle on the day previous, were established at the headquarters of the 9th corps. At eleven o'clock, or about that time, as near as I can remember, I removed to the headquarters of the army of the Potomac, which are situated about three-quarters of a mile to the eastward of the headquarters of the ninth corps, and are in telegraphic communication with the same headquarters where I remained during the rest of the day.

Question. How far was that from the scene of action?

Answer. If by the scene of action is meant the crater of the mine and that portion of the enemy's line in front of it, so far as I have knowledge of the ground, derived from maps, I should suppose that the headquarters of the 9th corps were possibly a mile to the eastward of the crater, and my headquarters are three-quarters of a mile, as I stated, beyond that, still further to the east.

Question. Could anything of the action be seen from there?

Answer. Nothing could be seen from any of the points that I occupied.

Question. Did you go further to the front during the action? If so, where?

Answer. I did not leave the headquarters of the 9th corps during the active operations.

Question. Did you not know that there were several positions on our line where you could see the action for yourself, and yet be in as proper a place for you as in General Burnside's permanent camp, and also have full personal communication with Generals Burnside and Ord, and be much nearer to General Warren, and likewise have telegraphic communication with the rest of the army?

Answer. I undoubtedly was aware that there were points of the line where I could see more of the action than I could see at the position I occupied, but I was not aware that there was any point where I could see anything particularly or on which I could base my orders. I adopted the position I did in consequence of its being a central one and in telegraphic communication with all parts of the line where officers were stationed with whom it was necessary to communicate; and having a large staff, and many communications to receive, and

many persons to communicate with, and being there in telegraphic communication, I considered it more proper to remain where I announced to the army my headquarters would be, and where all information could be sent to me, than to make any change of position as intimated in the question. Besides which, I desire to say to this court that it has been a matter of policy with me to place myself in such position that my communications made, and the replies made thereto, should be made in such way as a record could be kept of them, and not be confined to verbal communications, which are often subject to misapprehension and to misconstruction. There undoubtedly was telegraphic communication from General Burnside's headquarters in the field—the fourteen gun battery, as it was called—with the other headquarters in the army.

Question. Did you not have an aide-de-camp with General Burnside during most of the action?

Answer. During a portion of the time I did have Captain Sanders, aide-de-camp, at the headquarters of General Burnside. I sent him there in consequence of not receiving any communication from General Burnside, in the hope that he would be enabled to send me some information.

Question. Was not Captain Sanders sent there before the mine exploded?

Answer. No, sir; he was sent there some considerable time after the mine exploded; that is, upon the duty that I now refer to. I have previously stated to the court that before the mine exploded I sent two officers to endeavor to explain the delay. One was Captain Jay and one might have been Captain Sanders; but they returned before the explosion of the mine. After the explosion of the mine I sent Captain Sanders on the duty that I now refer to, which was to remain at General Burnside's headquarters and communicate to me anything which he could ascertain. I think it further proper to add to this answer to this question that, finding I did not get the information which I desired to have, or which I thought I could have, and fearing that my having sent an aide-de-camp—the object being to facilitate the transmission of information—might be used to deter responsible officers from communicating information to the commanding general, I withdrew Captain Sanders, before the action closed, by an order.

Question. For what purpose was he sent? Was it not to report to you the state and progress of affairs, and did he not so report?

Answer. I have already answered the first part of that question. As to his reports, all the despatches from him are on file in my evidence before the court. As to whether he reported all he should have reported, and all the information to be obtained, I presume the court will ascertain from him and from other evidence.

Question. Was there any information not furnished you by General Burnside, or through other sources, which, if received, would have influenced your conduct of the action? If so, what?

Answer. I have already informed the court that all the information I received has been placed before them in the shape of official documents. It is impossible for me to say what my action would have been if I had received any other information. I acted upon the information I received.

Question. What time did Captain Sanders leave General Burnside to return to you?

Answer. I should say it was about half-past eight; between that and nine, as near as I can recollect. I have a copy of the order to him, which I can furnish if desired.

Question. You state that General Burnside's despatch of 9 a. m. was the first information you had received that any collision had taken place, or that there was any enemy in our front; had you not, before the receipt of this despatch, written to General Burnside in reference to General Griffin's attack and repulse; also, received a despatch from Captain Sanders speaking of captured colors also, seen and examined rebel prisoners taken that morning?

Answer. In reply to that question, I would say that I am willing to assume that there is an apparent discrepancy in my testimony, which I am very glad to have an opportunity of explaining. I should suppose that any one cognizant of the circumstances that took place on that day, even of the most general nature, would know that I never meant to say that I did not know that there was no enemy anywhere. I was fully aware that when the crater was occupied a number of prisoners were taken. I was also aware that the enemy occupied their lines both on the right and on the left of the position occupied by General Burnside; and I did know that Captain Sanders had made a report of captured colors, and that an attack had been made in front of Griffin; but my whole attention was absorbed in the endeavor to have a charge made to the crest, and my thoughts were all upon that; and when I said this was the first intimation I had of there being any enemy in the front, I meant any enemy so situated as to prevent a direct assault upon the crest. Besides which, I must throw myself upon the consideration of the court, and say that the vast number of despatches, the frequency with which they were sent and received, was such that my memory may not serve me well, and the incidents may be, in a measure, not related in the exact order in which they occurred. I wish to call the attention of the court to a very important fact for the benefit of General Burnside, if it results to his benefit as well as to mine, and that is the difficulty of having the time of these despatches uniform. A despatch is sent to me marked with the time of the officer who sends it, but the time by his watch may be ten or fifteen minutes different from mine. But I do honestly and conscientiously say that that was the first positive information, when I received that despatch that the men of the 9th and 18th corps were returning, that I had that there was any such force or disposition of the enemy as to render it questionable that that assault could be made.

General Burnside here remarked, "I want the record in such a shape as to enable the casual reader and the revising officer to see that there was, before that time, an effort on my part, or on the part of some person near me, to give information, and not an effort to cast any imputation on General Meade, and I do not desire to invalidate his testimony, but simply to elaborate. I am confident that there is no disposition on the part of General Meade to make erroneous statements."

Question. Have you a note written me by you about two weeks before the assault as to the practicability of an assault in my front, my answer thereto, your second letter, and my reply, and will you be kind enough to furnish copies?

Answer. I presume that those documents, like all other official documents, are on file. I will have a search made for them, and as soon as they are discovered will very cheerfully furnish General Burnside or the court a copy of them.

[General Burnside explained that one of them was a semi-official letter, and General Meade, being reminded of the purport of it, answered that he did not think he had it.]

By the COURT:

Question. What knowledge had you of the movements of the different divisions of the enemy on July 30?

Answer. I had very positive information from deserters, not only those who came within my own lines here, but those who came into the lines of General Butler, and those who came into the lines of General Hancock, that there were but three divisions of the enemy in our front, consisting of Mahone's division of Hill's corps, and Johnson's and Hoke's divisions of Longstreet's corps; and that the other divisions of Lee's army were on the north side of the James river, confronting Generals Hancock and Sheridan, on the 29th. I also received the same information from prisoners taken that morning. During the operations I received information from the signal officer on the plank road that the enemy

were moving troops from their right to their centre, which I anticipated, and upon receiving that information the orders were sent to General Warren to endeavor to turn the enemy's right by pushing forward General Crawford, and to General Wilson to push on without delay, without waiting for the arrival of General Sheridan, coming from Deep Bottom.

Question. Did the order to suspend operations (given about 9 a. m., July 30) originate with Lieutenant General Grant?

Answer. No, sir; the order, I think, originated with myself. Some time before the order was given, I informed Lieutenant General Grant that, as far as I could see, there was no prospect of our succeeding in the manner in which we had expected to do; that the time had passed for the coup-de-main to succeed; and I suggested to him that we should immediately withdraw the troops, to which he acceded. About that time a despatch was received from the signal officer of the 5th corps, stating that the colored troops had captured a brigade of the enemy, with four of their colors, to which, although, I did not attach much importance, not knowing how a signal officer could see an operation of that kind when it did not come to me from the officer in charge of the operation. We, nevertheless, suspended this order and held it in abeyance until the arrival of the despatch of General Burnside, informing me that some of the men of the 18th and 9th corps were retiring, and I think also that the Lieutenant General himself rode down to our trenches and made some personal examination, and had seen General Ord, and had some conversation with him. Upon his return, from what he had heard from General Ord, and subsequently an officer coming in and saying that the colored troops, instead of capturing a brigade and four colors, had themselves retired in great confusion, which information, I think, was given me by Major Fisher, the chief signal officer, I again referred the subject to the Lieutenant General, and again gave him my opinion that, as it was then about 9.25, it was unnecessary to make any other efforts, and an unnecessary sacrifice of life; my idea being that they could be withdrawn without any difficulty then, as we should have difficulty later in the day in withdrawing them. To this he assented, and the order was given to withdraw them. Afterwards, when the information was received from General Burnside of the difficulty of retiring, then the order was modified.

Question. Were any instructions given for destroying the bridges in Petersburg in case the crest was gained?

Answer. There were not, for two reasons; and first, if we had succeeded, as I hoped we would, in overcoming the enemy, we should have driven them across the Appomattox, and should have wanted those bridges to follow them, but the contingency of their destroying those bridges was held in view, and it was to meet that contingency that the chief engineer was ordered to have a pontoon train brought up so that we could throw our own bridges. My expectation was that if we had succeeded in the coup-de-main, these three divisions of the enemy would have gone out of our way, and we should be enabled to cross not only the Appomattox, but also Swift run, and open communication with General Butler at Bermuda Hundred before General Lee could send any reinforcements from the five divisions that he was known to have north of the James river.

HEADQUARTERS, ARMY OF THE POTOMAC,

July 26, 12 m, 1864.

Major General BURNSIDE:

I wish you would submit in writing your project for the explosion of your mine, with the amount of powder required, that the preliminary questions may be definitely settled. You had better also look for some secure place in the woods, where the powder required can be brought in wagons, and kept under guard;

thus saving the time it will take to unload it from the vessels and haul it to your camp. Whenever you report as above and designate a point, I will order the powder brought up.

GEO. G. MEADE,
Major General.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,
July 26, 1864.

Major General BURNSIDE, *Commanding 9th Corps :*

GENERAL : The major general commanding directs me to inquire whether anything has transpired connected with your mine that leads you to believe it is in danger from countermining. If it is your conviction that it is so endangered, then the commanding general authorizes you to make every preparation for springing it; but directs that you do not explode it earlier than to-morrow afternoon, Wednesday the 27th, say at four o'clock, if not otherwise ordered. The commanding general further directs me to say that the charge of the mine should be determined by the usual rules governing such subjects. It is not intended by the commanding general to follow the explosion of the mine by an assault or other operations. If therefore the mine can be preserved for use at some early future day, when circumstances will admit of its being used in connexion with other operations, the commanding general desires that you take no steps for exploding it as herein prescribed.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. F. BARSTOW,
Assistant Adjutant General.

The foregoing is substantially the statement which I made to the court of inquiry.

It alludes to all the points which required any explanation on my part, so far as my own conduct was concerned.

There is one point, however, which I deem it proper to elaborate before this committee, because I have reason to believe it will be set forth prominently in the testimony of others, and that is the position I occupied on the field. The selection of this position was made the day previous, and was due to the fact that from it there were lines of telegraph running to the Avery and Jordan houses, which I presumed would be in the vicinity of the headquarters of the 5th and 2d corps, and instructions were given to run a line to the 14 gun battery, where General Burnside had informed me he should establish his headquarters. The object of its selection was to secure a central position, where I could be in prompt communication with the several corps commanders. During the operations I remained there, because, having announced it as the headquarters in the field, I feared if I left it some important communication might be sent, and time lost in hunting me up to deliver it. It was for this reason, stated at the time to the Lieutenant General commanding, that when he went to the front I did not accompany him. It was for this reason, also, that when Major General Warren proposed I should go over to his position, I did not accede to his request, for it seemed to me then, as it does now, that any information General Warren had in any manner acquired could be transmitted to me by telegraph as well as if I went there to see for myself, and the objection to going was the danger that during

my absence others might have information equally as important, which would not, owing to my absence, be promptly transmitted. I now refer not to going to General Warren's headquarters, because I am satisfied from the testimony of others that nothing was to be seen from there; and General Warren had himself transmitted me erroneous intelligence, which he subsequently corrected. Nor would going down to the front line of our works have produced any change, because the Lieutenant General on returning from them acknowledged to me that nothing could be seen, and he left there under the impression that all was going on well, when he met Major General Ord, who reported to him our people were being driven back.

Furthermore, I have the testimony of Major General Ord and others, that owing to the smoke from the artillery, and a mist which prevailed part of the time, there was really nothing to be seen or known, unless you went to the crater itself.

Now, I am willing to admit that had I gone to the crater I should perhaps have known earlier the true condition of affairs, and had I foreseen what subsequently occurred, I should undoubtedly have gone, but it would not have been because it was my place, but it would have been because I felt myself called upon to assume the duties of the corps, division, and perhaps brigade commanders. My failure to do so, in ignorance of any necessity for so doing, I respectfully submit should not be deemed a cause for censure. And it may be well for the committee to inquire who did go to the crater, and give their personal superintendence to the movement of the troops, and if it is found that any corps or division commander whose immediate command was there did not go, and did not deem themselves called upon to go, I trust I shall have the benefit of the superior knowledge they were presumed to possess, being not only nearer to the scene of action, but having communication with the troops there.

The points, therefore, which I desire to call the attention of the committee to are:

1st The position I selected was a proper one, had my orders been carried out to promptly transmit to me everything that occurred.

2d. That the testimony of others proves that it was a proper position, because those in other parts of the field, whose duty it was to transmit information to me, did not do so, and the inference therefore is that they could not, or did not, see or hear anything that would have influenced my action.

3d. I have the testimony of the Lieutenant General commanding, and Major General Ord, Brigadier General Hunter, Major Duane, and others who were at various points in the front, that nothing positive could be seen or known of the actual state of affairs.

4th. I maintain it would have been wrong in me to have left my post, without the strongest reason for so doing, and in confirmation of this I refer the committee to the fact on record, that between 5 and 10 o'clock I received and transmitted over one hundred despatches and orders, averaging one every three minutes, and that had I been absent it would have been impossible to have given the orders I did. If the committee will study what I did do on that day, they will see the impossibility of my having attended to all these points, and be at the same time riding round to see if my subordinates were doing their duty.

I feel satisfied that, on a deliberate review of what did occur, the committee will agree with me, that though possibly it might have been of advantage for me to have gone to the immediate front, it could only have been so in consequence of the failure of others to do what they should have done, and that under the circumstances, and with the knowledge I had, my course was the proper one.

HEADQUARTERS ARMY OF THE POTOMAC,
Before Petersburg, Va., December 20, 1864.

Brevet Major General O. B. WILCOX sworn and examined.

By Mr. Chandler :

Question. What is your rank and position in the army ?

Answer. I am a brevet major general of volunteers. At the time of the operations you are investigating, I commanded the third division, and I now command the first division, of the 9th army corps.

Question. Will you state such facts as you may deem important, in relation to the operations of July 30, 1864 ?

Answer. The attack of the 30th of July was intended and expected to be a surprise. It was thought that the mine could be exploded before or at daylight ; that it could be exploded at any minute desired. It was ordered to be exploded at half-past three, and every preparation was made for a speedy assault. The mine failed to explode at the time fixed, in consequence of a defect in the fuse. It did not explode until a quarter to five o'clock, or some time after daybreak. This probably gave the enemy some warning of a movement, because they must have noticed an unusual number of troops massed in rear of the works near the mine, so that, in point of time, it was not wholly a surprise. The explosion was expected to throw up masses of earth and stones at such a distance that our own troops were a little apprehensive of the effects of the explosion. The mine was less than 140 yards from our works, behind which the assaulting column was massed. In consequence of the explosion, there was a little hesitation on the part of the leading troops—those of General Ledlie's division. But in a few minutes those troops went forward and filled the gap caused by the explosion of the mine. There was a mistake on the part of one of the brigades of the first division, in going into the mine, instead of striking the works to the right of the mine. Thus, at the beginning of the movement, the whole of the first division found themselves in the very narrow gap, which was very much deepened by the explosion, so that it was some twenty-five feet in depth. In the mean time, the enemy had begun to recover from their surprise, and a fire was brought to bear from nearly every direction upon the troops at the crater, so that it was very difficult to form the troops outside of the crater. I think the first mistake made was in not moving the troops to the right and left of the crater, instead of through the crater ; whose mistake that was I do not know. The intention was, that the first division should move first, and pass over the works, and proceed to Cemetery hill ; the next division, mine, was to cross the works as soon as the first division should leave them, and then move up to the left of Cemetery hill, so as to protect the left flank of the first division ; and the next division, following mine, was to move in the same way to the right of Cemetery hill, so as to protect the right flank of the first division. The ninth corps being out of the way, it was intended that two other corps should pass through and be ready to follow up the result ; but in consequence of this narrow gap being filled up with troops, all huddled together in the crater itself, and unable to move under the concentrated fire of the enemy, no other troops could be got in. When I came down to support the first division, I found that division, and three regiments of my division, together with the regiments of the second division which had gone in on my right, so completely filling up the crater that no more troops could be got in there. I therefore ordered an attack, with the rest of my division, on the works of the enemy, to the left of the crater. This attack was made, and was successful, and the works to the left of the crater, for some 150 yards of the intrenchments, were held for some time by my troops. I do not think that the tactical arrangements for the troops for that movement were such as I would have ordered. But it is always easier to judge of those things afterwards than

before. I think that, in the first place, there should have been a storming party of picked troops, every man of whom should have known his business, and should have known that he was to go through the works of the enemy, and gain the top of Cemetery hill, without regard to rank or formation; and those should have been followed by troops in order, and ready to fight a battle. I think that the next division should have moved down the enemy's line to the left, and captured their men and guns, and the next division should have moved down on the other flank, inside the enemy's intrenchments. This, I think, would have opened the way for the whole army; but the order was for everything to move right on towards Cemetery hill, and the passage-way was so narrow that it proved to be impossible to do so.

By Mr. Julian :

Question. Whose order was that ?

Answer. The general order of General Meade was that Cemetery hill should be crowned. The particulars of that order came from General Burnside; that is, the movements of the divisions. At the same time, I think that other points of attack should have been selected, and other demonstrations or series of attacks made.

By Mr. Loan :

Question. Will you name those other points ?

Answer. Along the line to the right and left of the crater, in front of the 5th and 18th corps.

Question. Where was the 18th corps ?

Answer. The line of the 18th corps was to the right of the 9th, and the troops, except a portion for the trenches, came up and formed to the right and rear of the 9th.

Question. Where was General Hancock's corps ?

Answer. His corps was in rear of the centre, in reserve. The 18th corps was on our right, and the 5th corps on our left, in reserve, such of it as was brought out of the trenches, and the 2d corps, Hancock's, was in reserve, in rear of all. I would say here that operations by mining at a particular point have very seldom yielded any general results, so far as the history of war teaches.

Question. What we desire to learn is, if there were any errors committed, and if so, to ascertain those errors, and the cause of the failure.

Answer. Certainly.

By Mr. Chandler :

Question. Do you know what General Burnside's original plan of assault was ?

Answer. Yes, sir; General Burnside originally intended to make his colored division the storming party. The colored troops were the freshest troops in the corps, the other troops having been under fire in the trenches some fifty days. The colored troops had been drilled with a view to this movement on Cemetery hill, and it was intended that they should lead the advance, and crown Cemetery hill. That movement was countermanded by higher authority.

Question. Do you know whether it was contemplated in the original plan of General Burnside that there should be a movement to the right and left of the assaulting column ?

Answer. To a considerable extent it was.

Question. And the troops were drilled with a view to that movement ?

Answer. Yes, sir.

Question. Can you state at what time you received your orders as to the part you were to take in the assault of the 30th ?

Answer. About dusk of the afternoon before.

Question. Up to that time your part had not been assigned to you ?

Answer. Not fully ; I would say that the general plan of the movement was known to me about noon of the 29th.

Question. And the change in the troops to lead the assault ?

Answer. That was known by me about noon of the day before, (29th.) My orders I received about dusk.

By Mr. Loan :

Question. How long was it after our troops first entered the crater before the enemy opened fire upon them from the right and left ?

Answer. I do not think it was over ten minutes ; it may have been fifteen minutes from the time we struck the crater.

By Mr. Chandler :

Question. How long was it, after the explosion of the mine, before the commencement of the assault ?

Answer. I should judge that the troops commenced to move to the assault about five minutes after the explosion. The troops were sheltering themselves from the effects of the explosion, they were so close to the mine, so that it took five minutes, perhaps ten minutes, to form them in order to move forward. It was about fifteen minutes before the troops got to the crater after the explosion, and they had to pass over about 140 yards besides what they were staggered back by the explosion.

By Mr. Loan :

Question: Do you know from what points the troops of the enemy were drawn that opened this fire upon our troops on the right and left of the crater ?

Answer. The first fire was opened from troops in the enemy's trenches, on the right and left. The fire which we next encountered was from the enemy's field artillery, which took position in the rear of the crater, and which fired into and over the crater, and even over our own works. The third movement of the enemy was made, as I supposed, by reinforcements which the enemy brought up. But in the mean time, as I judged, the enemy drew troops from their intrenchments in front of the 5th corps, and moved them around and attacked our troops in the crater.

Question. Do you know any reason why the 5th corps could not have attacked the enemy's troops in front of them, and held them in check during this assault by the 9th corps ?

Answer. I thought the 5th corps was to make such an attack. But when I found there was no room for my division to go in where the other troops had gone, I supposed that an attack was to be made on the right and left.

Question. Do you know any reason why it was not done ?

Answer. I do not, other than the ordinary obstacles of the intrenchments. I know of no reason why the order was not given. My opinion is that the attack should have been made.

Question. Now, the same question in regard to the enemy's troops on the right ?

Answer. A vigorous attack should have been made on both sides.

Question. Do you know of any reason why an attack was not made ?

Answer. The troops of the 18th corps were massed on the right, and their lines were thinned out ; but still, I think there should have been a vigorous attack made on the right of the crater.

Question. Were there troops there that could have held the enemy's troops on the right ?

Answer. I think there were, viz, 18th corps men.

Question. Do you know of any reason why that should not have been done ?

Answer. I know of no reason why the attack should not have been made. The success of the thing would depend entirely upon other matters.

Question. I understand you to say that there was a mistake in the movements of one of the brigades of the 1st division in entering the crater, instead of passing over the works to the right?

Answer. Yes, sir.

Question. Do you know how that mistake occurred, and who was responsible for it?

Answer. I cannot state from personal knowledge, only from information derived from General Ledlie.

Question. About what hour of the day were our troops withdrawn?

Answer. It was between one and two o'clock.

Question. Did your command ever get beyond the crater?

Answer. My command got outside of the crater to the left, but not towards Cemetery hill, because they would have had to pass to the front of the first division to do that.

Question. Your orders were to pass through and take a position to the left upon Cemetery hill, so as to protect the left flank of the first division?

Answer. Yes, sir; subsequently, when it was found that the first division had not been able to move forward, my orders—the general order to all the 9th corps division commanders—were to press forward. But, in consequence of the way being blocked up by the advance, it was impossible to get the troops through, and that order was not carried out.

Testimony of Major General G. K. Warren.

HEADQUARTERS ARMY OF THE POTOMAC,
Before Petersburg, Va., December 20, 1864.

Major General G. K. WARREN sworn and examined.

By Mr. Loan:

Question. What is your rank and position in the army?

Answer. Major general of volunteers, commanding the fifth army corps.

Question. Please state concisely whatever you may deem important in regard to the springing of the mine and the assault upon the enemy's lines on the 30th of July last.

Answer. On that particular occasion I had very little to do. A mine was begun in front of General Burnside's lines, and when completed arrangements were made to explode it, and follow up the explosion with an assault. My duty was to support General Burnside's assault with two of my divisions, and hold the line that I occupied with my other division.

After the mine was sprung, and General Burnside's troops gained possession of the crater and the enemy's lines contiguous, they were nearly expelled from it by the enemy, without my troops being called into support, and the attack was abandoned.

I do not consider that I was in position to say, authoritatively, what was the exact fault, or who was to blame; whether the fault was in the conception of the plan or in its execution.

Question. Your command was on the left of the 9th army corps?

Answer. Yes, sir.

Question. In front of the enemy's works?

Answer. Yes, sir.

Question. Had you any orders to attack the enemy on your front at the time General Burnside made his assault?

Answer. No, sir, no more than that the batteries in my front and what infantry was there should keep down the fire of the enemy in my front, which

was effectually done. The enemy did not use his guns in our front to any extent.

Question. Did the enemy in your front join in the attack upon the troops of the 9th corps while in the crater?

Answer. I think not; I think they took no part in that attack.

Question. Have you any knowledge of what troops of the enemy on the left of the ninth corps were used to oppose our troops in the crater?

Answer. I have no knowledge; but I have understood that they came from west of the lead works to the left of my corps. It was a part of the general order that our cavalry should go around and attack the enemy in that position, but they did not get there.

Question. That is a matter of which you had no especial charge?

Answer. No, sir. My place in the programme was rather insignificant, so far as any knowledge of the affair was concerned.

Question. How were you to support the assault of General Burnside?

Answer. To follow his column.

Question. Was any place assigned to you particularly?

Answer. I was to have followed on as soon as I could. My troops were closed up on General Burnside's left, and as soon as his troops had got out of the way I was to follow on. The kind of support I should have rendered would have depended upon circumstances, and what General Burnside called upon me to do; for his being in command at the time, and directing the attack, we were to receive instructions from him as to where he wanted support, and how and when.

Question. Did you receive any instructions to obey General Burnside's orders as to the time when you were to assist him, and how?

Answer. I did not get any instructions to obey his orders specially; I would have done that by virtue of his rank on the ground, without any special instructions.

Question. I understand your statement to be that no part of the troops of the enemy in your immediate front were used in assaulting our troops in the crater, but that you held them in that part of their lines.

Answer. I think none were.

Question. Had you means of ascertaining certainly in regard to that matter?

Answer. As much as anybody in our army had; unless the enemy could have moved right from under my eyes without my seeing them. We did not any of us know how much covered way they had. But I am quite well satisfied that they did not take part in the attack.

Question. Do you know how long it was after our troops entered the crater before the enemy opened fire on them from the left, or opposite your front? I understand that from the time of the explosion of the mine everything was quiet for a time, and that our troops crossed over from our lines to the crater without any guns being fired upon them at all, and that the troops of the enemy did not rally immediately after our troops entered the crater.

Answer. Judging from what I saw I think the enemy opened fire on the left of General Burnside's line immediately after the troops started. I think that one or two guns there were fired upon the crater, and I do not know but they opened fire from the right; I do not know about that.

Question. Was there any fire opened from Cemetery hill?

Answer. There was a thirty-pounder battery there, or one or two 4½ inch guns upon the ridge that fired all around; they kept firing almost all day, at least I judge so from the shot lying around afterwards. It had not much influence on the affair, however.

Question. Was there any attack upon our troops from the left that amounted to anything that you knew of?

Answer. No, sir; none at all from the left.

Question. Do you know where the enemy's troops came from that attacked our troops in the crater?

Answer. I should think they came nearly in a direct line from this church, [indicating on the map,] obliquely from General Burnside's right.

Question. At what time did you receive your orders to co-operate in this assault?

Answer. In the afternoon of the preceding day.

Question. Were there any reasons why you should not have attacked the enemy directly in your front? I have heard it suggested that the enemy might have been attacked on the right and left of General Burnside's column.

Answer. It was not a part of the programme.

Question. What I mean is, do you know any reason why it should not have been a part of the programme?

Answer. I should say myself that I had no better chance to attack there after the mine was sprung than I had the day before. I might just as well have attacked at any other time, and a great deal better a month before, because the enemy had not then so many abattis, or batteries, &c. I fought a battle there on the 18th of July with all my corps, and with as much vigor as I could, when the enemy had had but one day's preparation, and did not succeed. Then they had had forty-two days' preparation. There was no more reason why I should have attacked the lines on my front on that day than on any day of the preceding forty-two. I had, with more men, failed in my attack before.

Question. And that was a reason why you should not have attacked on the 30th?

Answer. Yes, sir; if I had been asked beforehand I should have said that I would not advise it. But if I had been ordered to do it I should have done it. We have had to do a great deal of attacking in this campaign which did not seem exactly right to those in front; but it had a bearing upon other parts of the field which we could not understand. One of the most difficult things in a campaign is to subordinate your own particular ideas to the general plan. We have learned that now.

Question. You know of no other reason than what you have assigned?

Answer. No, sir; no other.

Question. What did your corps do on that day?

Answer. I do not know that I could say we did anything more than I have already stated, except to retire to the camp.

By Mr. Chandler:

Question. Will you state what, in your opinion, should have been the manner in which that assault should have been made?

Answer. In my opinion there should have been two independent columns, perhaps as large as a division each, to have rushed in immediately after the explosion of the mine, and have swept down the enemy's lines right and left, clearing away all their artillery and infantry by attacking in the flank and rear. This would then have allowed the main column to follow on to the main crest rapidly and without molestation. I believe that insufficient preparation was made in not making wider covered ways, and in not more thoroughly levelling our own parapets and removing our own abattis. The consequence was that the troops seemed to move very slowly, and went forward very stragglingly, like a skirmish line. Those that reached the crater apparently huddled into it, and made no attempt, that I know of, to take the enemy's lines to the right and left. The object of mining the enemy's lines at any one point was evidently to give the opportunity to take the rest of the enemy's lines in flank and reverse, and then the troops in front of those lines could move forward. Unless this part was properly carried out at the breach, all the rest of the forces would necessarily have to remain quiescent.

Question. If that had been done, what do you think would have been the result of the attack?

Answer. I think we would undoubtedly have gained the whole of the enemy's outer lines, and probably Petersburg.

By Mr. Loan :

Question. Could they have taken the line of Cemetery hill?

Answer. The main column should not have been bothered with the flank movement, but should have gone right on for the hill as soon as the road was clear; and it would not have been molested if the others had opened out for it. A similar programme to that was sketched in the order issued by General Hunt to the artillery, though I believe it was not in the general instructions. It was, probably, such an obvious matter that it was not thought worth while to specify it.

Question. In regard to the levelling of the parapets and removing the abattis preparatory to the assault, could that have been done with ordinary prudence, or would it have cost an unusual loss of life?

Answer. It should have been done at any hazard. If that could not be done the whole thing would be a failure.

Question. Did not the success of a movement of this kind depend upon its being a surprise, and the celerity with which the necessary operations were carried out?

Answer. Yes, sir.

Question. The lines of the two armies being so near each other, as they were, would not any attempt to remove the abattis and lower the parapets to any considerable extent have attracted the attention of the enemy, and put him on his guard?

Answer. The whole thing, except making the covered ways, could have been done in a half an hour, and that time would not have benefited the enemy much. In fact, the more men he had got into the mine, the more would have been blown up.

Question. What delay actually occurred after the explosion of the mine in the movement of the assaulting column, in consequence of the insufficient preparations?

Answer. What I meant was that the whole thing seemed to move slowly, and the men to straggle along up.

Question. Did you understand the delay to be occasioned by the failure to remove the abattis and to lower the parapets?

Answer. That was a part of it. I also said that the covered ways should have been very much wider; that was a very important part of it; that was inside of our own lines. The rear of General Burnside's troops had not got done moving to the front, when the head of the column was repulsed. There was no lack of troops, for there was no space for them to go up. If I had been there myself, I should have charged the enemy's lines right down to the right and left at once. If I could not have carried the two batteries each side of me, I should not have tried to do anything else.

Question. Yet you would have felt yourself under obligations to have obeyed any special orders to you in regard to your action there.

Answer. Yes, sir.

Question. Even if they had been at variance with your opinion as to what was judicious to have been done?

Answer. Yes, sir; but if I had been charged with conducting the assault, and those things I complain of had existed, I should consider myself personally blamable for it.

Question. If you had received positive orders to the contrary?

Answer. No, sir; but if I had been charged with assaulting that point, and

I had not cleared away those obstacles, I should have considered myself at fault.

Question. Was there any failure in the movement on that account?

Answer. Yes, sir; enough, in my opinion, to have marred any plan.

Question. How long was it from the time of the explosion of the mine until the head of General Burnside's column was in the crater?

Answer. That I do not know. I have heard it variously estimated from a few minutes to an hour. It was in the gray of the morning, and in the smoke, and I saw nothing of it myself.

Question. What is your opinion based upon, when you say the troops were delayed?

Answer. As soon as I could see, I saw them going up in a straggling manner, and the rear of the column was not out of the trenches until the time I have mentioned. To express to you how it was, the bringing back of the wounded through the covered ways almost stopped the column going to the front.

Question. That was inside of our lines?

Answer. Yes, sir; they should not have been allowed to bring any wounded men into our lines at that time. Check the advancing column under the fire of the enemy, and in my opinion it is nearly whipped then.

Question. It is liable to be repulsed?

Answer. Yes, sir.

Testimony of Brevet Major General Robert B. Potter.

HEADQUARTERS ARMY OF THE POTOMAC,
Before Petersburg, Va., December 20, 1864.

Brevet Major General ROBERT B. POTTER sworn and examined.

By Mr. Chandler:

Question. What is your rank and position in the army?

Answer. I am a brigadier general and a brevet major general of volunteers, commanding the 2d division of the 9th army corps.

Question. Will you state to the committee, as concisely as possible, what you know in relation to the springing of the mine and assault upon the enemy's works on the 30th of July last?

Answer. About the 24th of June, I should think, the idea of mining under the enemy's works in my immediate front was suggested to me; in fact, I had thought of it before, and several others had thought of the same thing. Lieutenant Colonel Pleasants, commanding the 48th Pennsylvania volunteers, came to my quarters and suggested to me that he was familiar with mining, and that many of the men in his regiment were miners, and that they thought they could undermine one of the enemy's works in my immediate front. After some conversation with him, I wrote a communication to General Burnside, who was then my corps commander, suggesting this plan of mining the enemy's works, and giving some of the details. The general subsequently sent for me to come to his headquarters and bring Colonel Pleasants with me, which I did, and we had an interview with him. Subsequently he notified us that he had submitted the plan to the general commanding the army of the Potomac, who approved of the same, and that we were authorized to undertake the work. We then went to work and pushed the mine along as well as we could until, about the 17th of July, we were near the completion of the mine. We were then under the enemy's works, and were directed to hold up. We did nothing for several days, except

to secure the work we had already performed. Afterwards we were ordered to go on and finish the work and put in the charge, which was completed about the 26th or 27th of July. On the 29th of July General Burnside sent me an order to report at his headquarters. Arriving there I found General Wilcox, who then commanded the 3d division of the 9th corps. We had some conversation about the explosion of the mine and the proposed attack; then General Ledlie, who commanded the 1st division, was sent for. The general plan of the attack, as proposed by General Burnside, was explained to us. While this interview was going on, General Meade, accompanied by General Ord and some staff officers, arrived there and had some conversation of a general nature. General Meade stated, to some extent, his ideas as to what ought to be done. They left, I think, to look at the position. It was understood that General Ord's troops were to come up to support the attack and to relieve a portion of our corps. Shortly afterwards, General Meade returned. At that time General Burnside, I presume, had made all the suggestions he wished in regard to the attack, and the only question was as to which troops should lead the attack. General Burnside suggested that, as we were all in the same position, the fairest way to decide the matter was by lot, which was accordingly done. By that decision General Ledlie was to lead the advance with his division, General Wilcox was to follow with his division, and I was to follow with my division after General Wilcox. The colored division of General Ferrero, who was not present at the time—General White was then temporarily in command of the division—was to come in last. The theory of the attack was, that after the explosion of the mine the leading division should advance immediately through the breach made in the enemy's works and attempt to seize the crest of the hill beyond, known as Cemetery hill; General Wilcox was then to follow through the breach and deploy on the left of the leading division and attempt to seize the line of the plank road; my division was to pass to the right of General Ledlie's division and form, so as to protect his right flank, on the line of a ravine which ran to the right, and which it was supposed it would be difficult to cross; then the division of General Ferrero, which was composed exclusively of colored troops, was to advance in case we secured a lodgment there, pass over the line of General Ledlie's division, and make an immediate assault on the town of Petersburg.

Some time in the course of the evening of the 29th of July, I think about nine o'clock, we received General Meade's written order, and an order from General Burnside in conformity thereto. The general detail of those orders was in conformity with the plan that had been suggested.

During the afternoon previous I had sent for my brigade commanders and explained the plan of attack to them, and directed them where to mass their troops, so that they should be prepared. One of my brigades, which held the trenches immediately in front of the mine, and extending around to the Norfolk railroad, was to have been relieved by a division of General Ord's command, commanded by General Carr. Owing to the darkness of the night, or to some other cause, only two regiments of this division of General Carr had arrived by 12 o'clock at night. General Carr himself then came to my headquarters and told me that his division had got astray. I told him that as soon as it came up he should relieve me. He relieved a small portion of my line to the right. About two o'clock in the morning, finding that my division had not been relieved, I wrote to General Burnside, and suggested to him that, as my troops had not been relieved, it would, perhaps, not be safe to take all the troops out of the trenches; that I would relieve a portion of the brigade in the trenches, clear the trenches immediately in front of the mined work, leaving a strong picket line there, and mass that portion of the brigade relieved with the rest of the division.

About three o'clock in the morning, just as I was getting on my horse, General Carr came to me and said that he had found the rest of his troops, and that

they would be up in half an hour. I told him I thought it would be too late then to change the programme. The time fixed for the explosion of the mine was, I think, half past three o'clock. I had my troops massed—those that were out of the trenches—on the right-hand side of the covered way that led from the rear of the line down to my line immediately in front of the mine.

The troops of General Wilcox were massed immediately on my left. General Ferrero's troops, I believe, were to General Wilcox's left and rear. General Ord's troops were massed mostly in a woods, some 500 or 600 yards in rear of where I had my troops massed. I had one regiment, which had been engaged in making the mine, which I had received orders not to put in the attack unless it was absolutely necessary. That regiment was in the rear, and I was using them as a provost guard. I had a small regiment as an engineer regiment, provided with levelling tools, &c.

The mine failed to explode at the time fixed. I waited for some time, and finally sent to inquire what was the matter. In the mean time I received a report from the officer in charge of the mine, Colonel Pleasants, that the fuze had gone out, and that an officer and a sergeant had volunteered to go in and light it again. At this time it had become daylight, but the enemy showed no indications of having discovered the dispositions we had made for the attack. I immediately reported the facts to my superior. I think it was about a quarter before five o'clock that the explosion took place. It was then broad daylight. Immediately all our batteries opened.

Finding that my column did not advance, as I had ordered, I sent to find out what was the difficulty. Before I got a report, however, Colonel Pleasants came back and told me that the first division had advanced across to the enemy's works, and had got into the crater of the mine and halted there, checking all the rest of the column. This report I sent to General Burnside. At the same time I sent an order to the commanding officer of my first brigade—the leading brigade—General Griffin, to advance to the right of the mine, if possible, and make an attack there on his own account; that it was important to press forward as quickly as possible before the enemy recovered.

About midnight of the night before, I had, on my own responsibility, given an order to General Griffin to deploy a line of skirmishers, who were to advance to the right of where we were expected to make an attack, and, if they found the enemy were stunned by the explosion, not to wait for the advance of the other troops, but he was to push ahead immediately with his brigade, and make a lodgement to the right. I impressed upon him the importance of time, for the success of this movement depended mainly upon its being a surprise.

In consequence of that order, as soon as General Griffin found that the division of General Ledlie was in the mine, he advanced his skirmishers, and followed with his brigade. The smoke which arose from the explosion, and the immense cloud of dust which hung over the place, made it almost impossible to see anything, and to some extent some of the leading regiments of his troops and those of General Ledlie's division got mixed up.

The confusion was increased to some extent by the colonel of one of the leading regiments being killed immediately after they struck the crater of the mine, or the lines of the enemy's works.

Colonel White, who led the advance, and who was taken prisoner on that occasion, advanced promptly through the line of the enemy's works, and turned to the right as he was ordered. Meeting with some opposition, and finding that the division of General Ledlie was not advancing, he halted, and sent back for orders. I was still urging General Griffin to press forward as rapidly as possible.

As soon, I suppose, as my report could have reached General Burnside that the troops of General Ledlie had halted at the crater, he sent me a verbal order by an aide-de-camp to the effect that I was to advance, instead of going where

I had intended, and attempt to carry the hill in front of the mine. This order I immediately communicated to my subordinate commanders, and gave such orders as were necessary to alter the disposition of the troops, and endeavored to push my column forward. But the difficulty which I had apprehended immediately occurred, viz: that as soon as we advanced into the opening in the enemy's lines we found it filled with men. The troops were thrown into confusion, and it was impossible to do anything with them.

By this time, which was probably a half or three quarters of an hour after the explosion of the mine, the enemy had recovered from the apparent panic into which they had been thrown, and had opened their batteries and concentrated their fire upon this point. There was a very severe fire. The worst fire I saw came from the right. There was a battery there behind some timber which it was very difficult for our batteries to reach. I ordered my own batteries to turn their whole attention to that one, but it apparently produced no effect at all.

The affair went on in this way for some time. We were endeavoring to press ahead. I got three or four of my regiments across and beyond this line of the enemy's works, and was getting them into pretty good shape. I was convinced that something must be done to create a diversion and distract the enemy's attention from this point. I accordingly gave orders to Colonel Bliss, who commanded my second brigade, to send two of his regiments to support General Griffin, and to take the remainder of his brigade and make an attack on the right. Subsequently it was arranged that the two regiments going to the support of General Griffin should pass into the crater, turn to the right, and sweep down the right of the enemy's works. This order was carried out. Colonel Bliss was partially successful, and we got possession of the line of the enemy's works to the right of the crater for the space of 200 or 300 yards, and one of my regiments got up within twenty or thirty yards of this battery which I was anxious to silence.

At this time I wrote a despatch to General Burnside, in which I stated that it was my opinion from what I had seen, and from the reports which I had received from my subordinate officers, that too many men were being forced in at this one point; that the troops there being in confusion, it was absolutely necessary that an attack should be made from some other point of the line, in order to divert the enemy's attention, and give us time to straighten out our line a little. To that despatch I never received any answer.

I kept receiving these orders to push our men forward as fast as I could. That in substance was about all the orders I received that day, up to the time of the withdrawal.

Some little time after this I received a copy of an order, which seemed to be a general order to division commanders, to the effect that we should attack at once with all our force, or press ahead with all our force at once, or something of that kind. I was at that time doing all I could to press my division forward, and consequently gave very little attention to this order, as I felt satisfied I was already doing my own duty in regard to it. It did not occur to me to reflect what effect that order would have upon the other divisions; but soon after this, as I was going back to report to General Burnside, I heard cheering, and turned around and saw the division of colored troops coming up to make an attack. They were advancing some distance to my left, moving obliquely to the right, and running parallel to the enemy's lines, who were firing on them. They then attempted to advance forward through the crater of the mine, and then to the right, where most of my men were; some of those troops halted when they found the other troops lying down; some of them advanced up to the ground where my men were, and formed in among them.

This added somewhat to the confusion. The colored troops made a very spirited attack, and behaved remarkably well while coming up. But the place

they came into was a place where we could hardly hope for any success, because the troops were so much broken up. They got up, gained some little ground, and then some time elapsed in trying to straighten out the men who had got confused.

I went on immediately to try and find General Burnside, and ask him not to send any more men there. When I did find him, General Ord was at the same place. Just as I commenced to speak to him some confusion arose, and I immediately turned back and found that this division of colored troops had given way and was coming back. I went then to look after my own division. No effort that I am aware of was made after that for the renewal of the attack at that point, more than the general order to press our troops forward.

I was in conversation with General Burnside, to whom I had again returned, for I wanted to withdraw one of my brigades, the one under Colonel Bliss, and make an attack still further to the right. I thought that by attacking on the other side of the ravine, I could burst through the line and get in rear of the battery which was annoying me, and relieve my troops in that way. General Burnside told me that he had received an order to prepare for the withdrawal of his troops, and that I should not take any steps until he had seen General Meade.

We did nothing more then except to hold our position until I received an order from General Burnside to report at his headquarters. General Ord's command was withdrawing at this time. I went there and had some conversation with him as to our position, &c., as to the practical difficulties in withdrawing our troops, and also the advantages of holding the position we had already gained.

We were then ordered to make arrangements for withdrawing our troops. Before I got back to my division—in fact, I think before I left General Burnside's headquarters—the enemy made an attack on us and forced our troops out of the position we had gained, and we then resumed our old position.

Question. Do you know the cause of the delay in the explosion of the mine?

Answer. Yes, sir; the fuzes went out where they were spliced.

Question. Do you know the cause of that?

Answer. I do not; I think there were three of the Gomez fuze; I subsequently inquired, but could not find out definitely what was the difficulty. The fuze, where it went out, did not seem to be wet, or anything like that, but had probably absorbed some of the dampness of the air. The charging of the mine, &c., was not strictly in accordance with the rules of engineering. The charge was larger than that laid down in the books, and the arrangement, in some respects, was different. My recollection is, that from where the charge was tamped there was about forty feet length of fuze. The mine was about one hundred and thirty yards long. Of course it required some time before a man would make up his mind that the explosion would fail, and before he would go in the mine to examine, and it took some little time to readjust it.

By Mr. Loan:

Question. You say you think there were three fuzes; have you any personal knowledge of the number of fuzes?

Answer. No, sir, I have not.

Question. At the commencement of your testimony you say it was determined by lot which division of General Burnside's corps should lead the advance; do you know any reason why the colored division should not have led that advance?

Answer. General Burnside was very anxious to have the colored division lead the advance on that occasion. We had been discussing this thing a long time. The reason why that division was not allowed to lead the advance was this: The morning that General Meade came with General Ord to General Burnside's headquarters, we were discussing the plan of this attack under the

theory that the colored division was going to take the lead. General Meade said, "I saw General Grant, and he agrees with me that it will not do to put the colored division in the lead." The reason why they were not put in was because General Meade would not permit it.

Question. Were those colored troops defective in any respect?

Answer. Not at all, that I know of, except that they had never been tried in action.

Question. Do you know whether they had been drilled with a view to making this assault?

Answer. Yes, sir, I had seen them drilling, and had discussed the matter with General Ferrero, and had seen the plan for the assault.

Question. I will ask you, as a military man, whether those colored troops were competent to make that assault at that time?

Answer. In my opinion they were the most fit troops in the corps, at that time, to make that assault.

Question. What kind of service had the white troops been rendering? Was it, or not, of an exhaustive nature, tending to reduce the morale and spirit of the troops in reference to making an assault at that time?

Answer. The white troops of the corps had been in the trenches from the 19th of June, under the immediate fire of the enemy, which at that time was very severe. Our losses were very considerable indeed. The weather was very hot, and the labor of building works, &c., was very exhaustive. In fact, the troops were in very bad condition physically. The losses on the line around Petersburg at that time, from the heavy fire of the enemy, were principally confined, I think, to the ninth and eighteenth corps. Before taking up this position they had been very heavily engaged on the 17th and 18th of June, and had lost very heavily.

Question. What was the spirit of the troops, owing to this exhaustive labor—higher or lower than was usual with that command?

Answer. I think it was lower than was usual with them.

Question. What had the colored troops been doing?

Answer. They had been in the rear. I do not think they had been doing anything in particular. They had principally been drilling with a view to making this assault. They slashed considerable timber and built some works on the left.

Question. Was their morale high or low, comparatively speaking?

Answer. As far as I could judge it was very good.

Question. What troops of the enemy were they who fired upon our troops as they entered the crater? And how long was it from the time our troops entered the crater of the mine until the enemy opened fire upon them?

Answer. The musketry fire opened immediately; the enemy's artillery did not reply for some time; I think it was fifteen or twenty minutes before I noticed any artillery firing.

Question. What troops of the enemy opened fire?

Answer. The troops occupying that line of works.

Question. Do you know any reason why our troops upon the right of General Burnside's line did not attack the troops of the enemy opposite to them?

Answer. I do not know any reason, except from hearsay.

Question. Do you know of any military reason why they should not have been ordered to do so?

Answer. I do not.

Question. Was there any military obstruction or obstacle that would have rendered it injudicious to have given such an order?

Answer. Not that I could see. The enemy's works were very strong; I cannot say anything more than that.

Question. That you may understand the object I have in view in making these inquiries, I will say that I understand the lines of the two armies, where

the mine was, were opposed to each other and about a hundred yards apart, and it was the business of those confronting each other to hold their respective lines.

Answer. Yes, sir.

Question. Now at the time that General Burnside made his assault, was it judicious for the commands on his right and left to have attacked the enemy's troops in their immediate front, and to have kept them engaged so as to prevent their firing upon General Burnside's advancing column?

Answer. In my opinion it was.

Question. Do you know of any military reason why such orders might not have been judiciously given?

Answer. I think it probable that our line to the right was rather weakly held.

Question. Who was in command on the right?

Answer. I think that General Mott's division of General Hancock's corps occupied the line to our right. The troops of General Ord which had been holding the line to our right had been massed to support this attack, and the position they had held had been taken by this division of General Mott, which I think had been drawn from the north side of the James for the purpose of relieving Gen. Ord's troops. The explosion of the mine and the assault following it had been preceded by a diversion by General Hancock upon the north side of the James. General Hancock himself that day was on that part of our line, to the right.

Question. Were the troops under his command brought into action that day in any way?

Answer. Not that I am aware of.

Question. At what time did you receive orders to withdraw your command from that assault?

Answer. I think it must have been about mid-day.

Question. Do you, as a military man, think that any advantage could have been gained by continuing the contest longer on that day?

Answer. Not at that point.

Question. Would a longer continuance of the contest, with the troops capable of fighting, have been of any benefit in relieving those in the crater of the mine from the confusion into which they had been thrown?

Answer. A demonstration on our right and left I think would have relieved us.

Question. Was it possible to have made that demonstration with any troops that were available at that time?

Answer. I think so.

Testimony of Lieutenant Colonel Charles G. Loring.

HEADQUARTERS ARMY OF THE POTOMAC,
Before Petersburg, Va., December 20, 1864.

Lieutenant Colonel CHARLES G. LORING sworn and examined.

By Mr. Chandler:

Question. What is your rank and position in the army?

Answer. Lieutenant colonel and assistant inspector general of the 9th army corps.

Question. Did you hold that position on the 30th of July last?

Answer. I did.

Question. Will you state concisely the facts within your knowledge in relation to the assault made by the 9th corps on that day?

Answer. I had made, with Colonel Van Buren, the position of the enemy a subject of special study; and therefore, on that occasion, I volunteered to go in with the first division that was to go in. The plan of the attack was changed

from that first decided upon by General Burnside. His plan had been to have the colored division, under General Ferrero, lead the assault, and to have the attack made with a certain formation of the troops engaged. Both of those points were countermanded on the day previous to the actual assault. The reason for selecting the colored troops to lead in the assault, I suppose, was in some slight measure due to an opinion I had expressed, as follows: Some time previous to the intended assault I officially informed General Burnside that, in my opinion, the white troops of his corps were not in a fit condition to make the assault; that many of them had been for six weeks in close proximity to the enemy's lines, within one hundred and thirty yards; that all of them had been very near the enemy's fire; and that when troops are exposed, as they were, day and night for six weeks to an incessant fire, it is impossible that they should have the same spirit as fresh troops. In addition to that, before sitting down before the enemy's lines, they had been very much worn by the long and arduous campaign, in which, as I considered, the 9th corps had performed more arduous services than the other corps. But even if they had been fresh when they had arrived before Petersburg, the experience of those six weeks—during which they had been under fire day and night without cessation, so that it was impossible to go to the rear even to attend to the calls of nature without being exposed to being killed on the spot; during which period their losses had averaged over thirty (30) per day, amounting in the whole to one man in eight—was enough at least to weaken the zeal of the men. For this reason, principally, General Burnside selected to lead the assault the colored division, which up to that time had never been under any serious fire. Parts of it had been engaged in one or two little skirmishes, but the division had never been under any serious fire. That division was therefore selected upon the principle that fresh troops are much better to make an assault than old but worn-out troops. This plan was changed at noon of the day previous to the assault, and the first division of white troops, under General Ledlie, was selected to lead the attack the next morning.

At about half past two o'clock of the morning of the 30th I went with General Ledlie down to the front line, and we took our position very near the line, close in rear of it, with his division, waiting for the mine to explode. There was a delay of perhaps three-quarters of an hour in the explosion of the mine. But I do not think the enemy discovered at all that we had made any unusual preparations. As soon as the explosion took place the division started to go in. But it was not with the formation that General Burnside had desired, nor with exactly the same object. General Burnside's plan had been to throw in a column, the two leading regiments of which were to wheel, the one to the right and the other to the left, and sweep down the enemy's lines on either side, while the main body were to press on to the top of the hill beyond the crater of the mine. This formation, as I understand, was altered by orders from headquarters. The first brigade that went in started from our lines in three lines, with instructions to the brigade commander, as also to the commander of the second brigade, to push on at once for the top of Cemetery hill. I crossed over myself while the brigade which started second (being the first brigade) was passing out of our lines, and went into the crater of the mine, where I found the brigade that first started (being the second brigade) crowded together. The crater presented an obstacle of fearful magnitude. I suppose it was a hole of about 200 feet in length, by perhaps 50 or 60 feet in width, and nearly 30 feet in depth. The sides of it were composed of jagged masses of clay projecting from loose sand. The upper surface had been of sand, with a lower stratum of clay. It was an obstacle which it was perfectly impossible for any military organization to pass over intact, even if not exposed to fire. The whole brigade was broken up in confusion, and had utterly lost its organization. The officers were endeavoring to reform their men, but it was an exceedingly

difficult operation. I remained there for about ten minutes. By that time the rest of the division had come up, and the whole of the first division was in the crater or lines immediately adjoining. It was all in the same confused condition. I went back to report to General Ledlie the condition his division was in, and to see if he could not rectify it. I then went up and told General Burnside of the state of affairs. From that time forward my position was mostly near General Ledlie in our old front line. As to what occurred with General Potter's division I cannot say, as that was some distance from where we were placed. Nor did I have any particular connexion with any other transactions until the ordering in of the colored division, which I think took place about half past seven o'clock. I cannot be precise as to the time, for I have not my notes with me. The troops in the crater of the mine had remained in confusion. They had spread themselves for a short distance both on the right and left of the crater, though it was exceedingly difficult for them to do so. The lines of the enemy were found to be of the most intricate nature. There was one uniform front line; then in the rear there were various lines, traverses between, and bomb-proofs. It was more like a honey-comb than anything that can be seen on our lines; so that it was exceedingly difficult for troops to spread themselves either way, either to the right or to the left. It had to be done, not by any movement of a mass of troops, but by hand-to-hand fighting. All that I know of what took place beyond those lines I know from hearsay only, as the lines were so high as to cut off the view. I know from reports brought to me by others that our troops made several attempts to get up the hill, but I did not see that myself.

Nothing especial occurred, so far as I saw, until about half past seven o'clock, when the colored division was ordered in. At that time I was standing in our front line. General Ferrero, who commanded the colored division, was standing near me when the order was brought to him, by one of General Burnside's staff, to lead his division also into the crater, and to push for the top of the hill. The order struck me as being so unfortunate that I took the liberty to countermand it on the spot. General Ferrero hesitated, as he said here was a positive order from General Burnside. I told him that I was the senior staff-officer present, and that, in General Burnside's name, I would countermand the order until I could go up and inform General Burnside of the state of affairs.

I went up and represented to General Burnside that this colored division could not be expected to pass the lines of the old troops; that it was impossible to expect green troops to succeed where old troops had failed before them; and furthermore, that, instead of accomplishing any good result, they would only throw into confusion the white troops that were already in that line and holding it. General Burnside did not reply to me, as he usually does to his staff officers, by stating his reasons for disagreeing with them, but simply repeated his previous order.

That evening, after the affair was all over, General Burnside showed me a written order from General Meade, directing him to throw in all his troops and push for the top of Cemetery hill; and he added that under those instructions he felt that he could not have done otherwise than he did.

The colored division went in very gallantly indeed. The fire of the enemy, at that time, was exceedingly heavy, especially from some batteries in a ravine on the right, and also from some batteries on our left. There was consequently a cross-fire directed upon the ground over which the colored division had to pass. Besides that, they were exposed to a cross-fire of infantry.

They went in very gallantly. I think it was about half an hour after that that they came running back in confusion. I understood that not only were they driven back in confusion, but it entailed also a heavy loss upon the white troops then in the enemy's line of works, and who came out with the colored troops.

I remained at the front until towards noon, when General Burnside ordered

all his division commanders to report at his headquarters, he having received a peremptory order to cease aggressive operations and withdraw his troops. He directed me to carry the order down to the front line, and to send it in to the troops that were in the crater. I think the officer who carried the order to the brigade commanders of General Potter's division was the only officer who succeeded in getting in. The order was sent in, and indorsements were put upon it by the various brigade commanders then in the crater. One only advised waiting until night; the others advised immediate evacuation when they found that it was intended by the general commanding that the line should be evacuated, and not permanently held.

After General Burnside had received the order that offensive movements should cease, and while his men were yet struggling in the crater, the troops of General Ord, stationed in rear of the mine as a support to the 9th corps, were the greater part withdrawn, and in such way as to disclose the movement to the enemy.

Soon after this order came in the enemy prepared another charge, and the brigade commanders decided to evacuate at once, which was done, leaving, I believe, many in the crater, who were taken prisoners.

By Mr. Loan:

Question. What troops went into the crater of the mine besides those of General Ledlie's division?

Answer. General Ledlie's division was to go in first; the whole of that division went into the crater, or lines immediately adjoining. General Potter's division was to go in next, but to go in on the right of the other. I did not see them, and I do not know how many of them went into the crater. I simply saw the head of the column going in. I understood that they all went into the enemy's lines, but I cannot say positively about that. General Wilcox's division also went in, at the same place where General Ledlie's division went in. I think four of his regiments—I am not sure of the number—failed to get in. In starting from our line, they bore off too much to the left and came back to our own line, and did not go in. I think that, with that exception, the whole of General Wilcox's division went into the enemy's lines. The regiments of his division went in at different times, not as a division, but disjointedly. And at half past seven, about two hours and a half after the mine exploded, the whole of the colored division went in at the same point.

Question. How many of those troops gained the high ground beyond the crater, within the enemy's lines—the ground outside of the crater?

Answer. I cannot say how many. They made a great many attempts to charge up the hill, but how far they reached I cannot say, because I was not with them. I was not in the crater at the time they made any of their charges; only those on the spot could answer that question.

Question. Are you able to state how many of our troops were in the crater at the time the order to retreat was given?

Answer. I am not.

Question. Can you tell what the men were doing in the crater from the time General Ledlie's division entered it until the order to withdraw was given?

Answer. They immediately prepared the ground in front to protect themselves, and those who had arms and ammunition prepared to defend themselves.

Question. That would be only one line, at the lips of the crater?

Answer. Yes, sir; and they also held a long stretch of the enemy's lines, to the right and left of the crater.

Question. What troops?

Answer. General Potter's troops held the line on the right, and General Wilcox's troops that on the left.

Question. Were those lines held by troops that had originally gone into the crater of the mine?

Answer. No, sir; almost all of the first division were collected together in the crater; some few of them were on the right; the most of General Potter's command were on the right; almost all of General Wilcox's command were on the left; some few of them were also in the crater. Two guns of the enemy were dug out of the ruins and turned against the enemy. At one time we held at least 400 or 500 yards of the enemy's lines, the crater in about the centre.

Question. Do you know where the troops of the enemy opposed to our troops in the crater were brought from?

Answer. When the column first went into the crater there was very little opposition. But the enemy's infantry remained within their lines within 200 feet of the crater; I myself saw them within 200 feet of the crater. They remained there when we went in, until gradually driven out, man by man, and our line spread in that way. After we had been there some time the enemy brought some troops to the top of the hill. There were two slight earthworks there in which they had mounted field-pieces, which fired shrapnell and canister all the morning. They came to the top of the hill, and then down a covered way which was on the right, which covered way they used as a breast-work. It connected with their lines, and from that they fired the whole time.

Question. Was there any eminence which commanded the crater, or were our men in the crater protected?

Answer. The men in the crater could be protected from direct fire by standing down in the bottom of it, but those standing on the top of the crater were exposed to a steady fire of canister from the hill beyond, which was decidedly higher than the crater, and the enemy brought their mortars to bear upon the crater, so as to drop their shells right over it.

Question. If I understood you rightly, you stated that on the day before the assault the plan of attack, as well as the tactical arrangement of the troops, were changed?

Answer. Yes, sir.

Question. By what kind of an order, verbal or written; and by whom was the order given?

Answer. So far as I know it was only a verbal order. General Meade came to General Burnside's headquarters at about noon of the day previous to the assault, and there gave the order.

Question. Did you hear General Meade give the order?

Answer. I was not present.

Question. Then all you know about it is from information derived from others;

Answer. Yes, sir.

By Mr. Chandler:

Question. Do you know the cause of the delay in the explosion of the mine?

Answer. While we were waiting there, I wrote to Colonel Pleasants, asking the cause of the delay. He replied to me that the fuze had gone out at a place where it had been spliced together; that he had sent some one in to rectify it—to rejoin it and relight it—and that it would go off at a certain time which he named, which time it did go off.

Question. Were there one or more fuzes?

Answer. I think there were two laid, but I am not certain.

Question. You have no personal knowledge of that?

Answer. No, sir. I wish to say a word in relation to the enemy's artillery fire. I understand an officer of high authority has said that the enemy's artillery fire was silenced during the latter part of that affair. I can only say that it is the opinion of one who could not have been in the front line that day. I was myself in our front line, except for the short time that I was in the crater,

and the short time when I went to report to General Burnside on two or three occasions ; with those exceptions, I was in the front line the whole of that morning, and I know that the enemy kept up a very steady and heavy fire of artillery from both the left and the right, raking the whole of the ground from our line to the crater of the mine ; and further, that from the hill in front of the crater they kept up a steady stream of shrapnel and canister, whenever any demonstration was made by our troops. I can testify to this very positively, as I was present on the spot.

Testimony of Brevet Lieutenant Colonel J. L. Van Buren.

HEADQUARTERS ARMY OF THE POTOMAC,
Before Petersburg, Va., December 20, 1864.

Brevet Lieutenant Colonel J. L. VAN BUREN sworn and examined.

By Mr. Chandler :

Question. What is your rank and position in the army ?

Answer. I am a major and additional aide-de-camp, and brevet lieutenant colonel.

Question. What was your position on the 30th of July last ?

Answer. Major, and aide-de-camp on the staff of Major General Burnside, then commanding the 9th corps.

Question. Will you state, as concisely as possible, what you know in regard to the action of that day ?

Answer. On the night before the assault I was detailed by General Burnside to be with General Potter, who commanded the second division of the 9th corps. There was a staff officer detailed to each division. I reported to General Potter about half past two o'clock on Saturday morning, the day of the assault, and went with him to the front line where the reserves were massed. On the way there we met an officer from Colonel Pleasants, who reported that the mine had been fired and would explode at 3.41 a. m. After waiting a certain time and hearing no explosion, General Potter sent down to inquire about it, and I went over and reported to General Burnside that General Potter had sent down. I then returned to General Potter. An officer from Colonel Pleasants reported that the fuze had gone out, but he had had it relighted, and the mine would explode in a certain number of minutes. I went back to General Burnside and reported this to him, and to Captain Jay, of General Meade's staff, who had been sent by General Meade to ascertain the cause of the delay in the explosion ; and while I was there, at 4.42 a. m., the mine exploded. I then returned to General Potter, and remained with him I should suppose for one hour, reporting to General Burnside by letter any information that came to me in regard to General Potter's troops. General Potter's division was the second in the order of attack in the assault that followed the explosion. About seven o'clock I told General Potter I thought I would go down myself and see what I could ascertain, and I went down to our front line. While I was there Captain Harris, of our staff, came and asked for General Ledlie, who commanded the division that led the assault ; I told him I was just going over to the crater, and would take over any orders to him. Captain Harris had orders from General Burnside that General Ledlie must push forward his division at once. I went over to the crater, but did not find General Ledlie there ; I saw his two brigade commanders, General Bartlett and Colonel Marshall, and communicated the orders to them ; soon afterwards a staff officer came in from General Ledlie with the same orders. After some little delay Colonel Marshall said to me that he did not think he could advance from where he was ; that the enemy were

on his flank. I told him I would go down with him and look at his line. As you go out of the crater of the mine you come into a labyrinth of bomb-proofs and magazines with passages between. The enemy's rear line was about twenty-five yards in rear of their front line, and between them were these bomb-proofs, making a very bad place for troops to pass over. In that way for about three hundred yards our first division was crowded in some confusion; beyond this came the high rear line, and on the other side of that was the enemy's covered way, and in that the most of General Potter's division. I went down the line to the right, about three hundred yards, to where the line crooked, and just the other side of the line were the enemy, and quite sharp firing was going on. Colonel Marshall told me that he did not see how he could charge with those men on his flank; I told him that the orders were imperative, and the charge on the crest must be made. We formed a line of his brigade on the right, and General Bartlett's brigade on the left, so far as we could on the bad ground, and charged, but, meeting a very heavy fire, the line broke and fell back. I then assisted Colonel Marshall in reforming his men. While we were reforming Colonel Marshall's brigade along the enemy's line, the head of the colored division came over the crest of the crater right down this line, and knocked all to pieces the formation we had secured. Colonel Bates, in command of one of the colored regiments, was at the head of this colored column. Colonel Bates apparently did not know where he was going to strike for. I pointed out a white house on Cemetery hill as the objective point. It seemed to me that by detaching a force, and charging down the line at the same time that we charged in front, we should probably capture the enemy's men on the right who were annoying us. I started back towards the crater; when I got very near there, I saw the movement of this colored column, jumping out from the enemy's line towards our line in the rear, and striking off towards the right. They carried about two hundred yards of the enemy's lines, capturing a color and quite a number of prisoners. I went with them as far as they went, and then came back to the crater to see the officers there. Just as I got to the crater the second brigade of the colored division came across, going right through the crater and somewhat to the right, and right over the tops of the bomb-proofs, and over the men of the first division. They came on in good style, under a sharp fire, but were much broken and disordered by the unfavorable ground and the crowded condition of the pits. All this time the fire of the enemy was very heavy. There were two guns in what was known as the fort on the left of the New Market road, and two guns just across a ravine to the right. They were throwing canister and shrapnell in there in a very lively way. There was some mortar firing also.

I then saw Colonel Sigfried, who commanded the right brigade of the colored division, and Col. Thomas, who commanded the left brigade. General Ferrero was not there. I gave them their instructions for the final charge of the whole division. I instructed Colonel Thomas to form his brigade as far to the front as he possibly could; Col. Sigfried to form on his right, and then to charge directly for Cemetery hill. I instructed Colonel Marshall and Gen. Bartlett to form their brigades, as much as the nature of the ground would permit, in the rear of the colored division, and support the charge.

I suppose this must have been about a quarter to nine o'clock. Having made these arrangements I started back to report to General Burnside. But the difficulties in the way of getting back were so great, the firing being very heavy, and the covered way being crowded with the troops of the eighteenth corps, that it took me a very long time to get up. Before I got up there the colored division had made their charge and been repulsed.

Then occurred the trouble that had been anticipated. When they fell back into the enemy's lines, which were already crowded with the troops of the white divisions, and with their own stragglers, their formation was utterly broken up.

They lost coherence, and a great part of the colored division came surging back in confusion.

I saw General Burnside and reported to him all that I had done. In the course of twenty minutes after that came an order from General Meade for the withdrawal of the troops, which finished the operations for the day.

We stayed around there long enough to attend to anything that had to be done, and then we went back.

Question. What was the cause of the delay in the explosion of the mine?

Answer. A failure to burn at a place where the fuze was spliced. The fuze came out, and of course it had to be spliced, and at one of the places of junction it had failed to burn.

Question. In how many pieces did you receive the fuze?

Answer. I knew at the time, but I would not pretend to state now.

Question. Do you know whether there was more than one fuze laid to fire the charge in the mine?

Answer. The fuze was laid in a trough of powder; if the one did not go off the other would. I would not be certain about the number of fuzes.

Testimony of Major General H. J. Hunt.

HEADQUARTERS ARMY OF THE POTOMAC,
Before Petersburg, Va., December 20, 1864.

Major General H. J. HUNT sworn and examined.

By Mr. Chandler:

Question. What is your position and rank in the army?

Answer. I am a major general, commanding the artillery of the army of the Potomac.

Question. Will you state what information you have in regard to the attack on the 30th of July last on the enemy's lines before Petersburg?

Answer. About the 3d of July I was ordered, in conjunction with Major Duane, of the engineers, to make an examination of the lines of the enemy facing east in front of Petersburg, and to ascertain whether an assault was practicable, especially in front of Generals Burnside and Warren. I made the examination with Major Duane, and reported, I think on the 6th of July, that an open assault would be very dangerous, and that it would be better to have our approaches partake rather of the nature of regular approaches. This was ordered to be executed, and proper measures were taken by Major Duane and myself to carry them on so far as the means would permit. There were not sufficient troops to extend our left sufficiently to embrace the angle of the enemy's works, where their lines turn and run towards the west. The work was consequently slow. About the 28th of July, after the principal batteries had been erected, orders were issued for an attack on the position of the enemy in front of General Burnside's line, as a mine which he had constructed, and which it was meant to work into the operation, had been completed. It was necessary, in order that the assault should be successful at the point indicated, that the angle of the enemy's lines of which I have spoken should be in our possession, or that such preparation should be made as should suppress his fire at that point, his principal batteries being those, and from that position the whole ground in front of our line could be swept. From the want of troops to envelop that position, it was impracticable to carry forward approaches against that angle so as to get it in our possession. I therefore limited myself to bringing such a weight of artillery to bear upon it as would keep down its fire, and also to keep down the fire along the whole of the enemy's lines upon which was placed the battery which had been undermined. The plan of General Burnside, who was to make the assault,

as given to me by him, was to send forward a heavy column of troops, so arranged, that as soon as the explosion should take place, or the mine was sprung, they would pass over the mine and form to the right and left perpendicularly, and sweep down the enemy's lines. The troops with which he intended to assault Petersburg were to advance immediately after the others, assault the battery behind the mine on the crest held by the enemy, and pass on from there into Petersburg. My preparations were all made on the 28th of July, and examined and verified on the 29th. On the morning of the 30th the mine was sprung a little over an hour after the time appointed. The artillery opened as directed, and succeeded remarkably in keeping down the enemy's fire, as he was evidently surprised. There was one battery upon the crest behind the mine, which opened at intervals, but which was always silenced after firing not more than two or three rounds. The battery next to the one undermined, on the left, as we looked at it, was silenced, with the exception of one or two guns in a hollow, near the left flank of the battery next the mine. From this gun, or perhaps two guns, a fire was kept up at intervals on the position of the crater of the mine. That battery was one, as I understood it, that was to have been in our possession within ten or fifteen minutes after the explosion of the mine; that is, as soon as troops could pass from the crater and sweep to the left and get possession of it. The position of the guns which, if any, would have commanded that hollow, was immediately behind the mine, and between that position and the enemy's battery there was a fringe of woods which was to have been cut away by General Burnside's troops, but which had not been cut away down to the 29th, when I sent down to see if all the preparations had been made. General Burnside declined cutting away that wood, as so doing would alarm the enemy. I could not see very clearly what took place about the mine, as I had to look after my own guns, which covered a very large extent of ground. But after some delay, an hour and a half I suppose, I saw portions of the troops that had formed close to the enemy's lines. I did not see them advance beyond the enemy's line. About 8 or half past 3 o'clock, or rather in the course of the morning, for I will not be positive about the time, an order was given for the troops to charge.

Question. You spoke about a delay in the explosion of the mine. Do you know the cause of that delay?

Answer. I understood at the time that it was owing to the fuze which led to the mine having become broken.

Question. Do you know whether there was one or more fuzes laid to the charge in the mine?

Answer. I do not know how many fuzes were placed in it. I furnished safety fuzes enough to make three or four lines. But I understood that it was determined, instead of using this safety fuze, to use a wooden pipe filled with powder. But I cannot speak positively as to that.

Question. Do you know the condition of the fuze that was furnished; was it in good condition, and in a few or many pieces?

Answer. I do not know in what pieces it was furnished. I know there were some hundred yards of it. I did not see it myself; I ordered it from City Point to General Burnside, and that order was handed over to the ordnance officer. It was sent by the ordnance officer at City Point to the ordnance officer of General Burnside's corps, Captain Harris, I believe.

Testimony of Brevet Colonel James C. Duane.

HEADQUARTERS ARMY OF THE POTOMAC,
Before Petersburg, Va., December 20, 1864.

Brevet Colonel JAMES C. DUANE sworn and examined.

By Mr. Chandler :

Question. What is your rank and position in the army ?

Answer. I am a major of engineers, and brevet colonel, and acting chief engineer of the army of the Potomac.

Question. Will you state what you know about the attack upon the enemy's lines before Petersburg, on the 30th of July last ?

Answer. Orders were given to concentrate all our fire in order to silence the enemy's fire while General Burnside's operations were going on after the explosion of the mine. The position I had at 3 o'clock on the morning of the 30th was on General Warren's line; I was assisting General Abbott in directing his fire. The 18th corps was massed in rear and a little to the right of the 9th corps. A portion of the 5th corps was massed along the line of the Norfolk railroad, in the cut, ready to support the attack of the 9th corps. As soon as the explosion took place, all the guns on the line of the 5th corps opened fire and completely silenced the enemy's fire. I remained on the line of the 5th corps until nearly 8 o'clock, during which time we kept up a constant fire. I then proceeded to General Warren's headquarters. When I arrived there, I found that the troops that had proceeded to the crater of the mine were falling back. With regard to the operations of the 9th corps I had very little to do. General Burnside took on himself the entire charge of the engineering operations there.

By Mr. Loan :

Question. What in your opinion was the cause of the failure of the attack ?

Answer. I think the difficulty was, that proper measures had not been taken to clear away the obstructions both in front of our own line and the enemy's line; and also in making the attack by the flank instead of in columns.

Question. What number of columns do you think the assaulting force should have been composed of ?

Answer. I think they should have gone up in three columns.

Question. In what relation to each other do you think those columns should have been ?

Answer. The leading or centre column should have gone to the crater of the mine, and removed the obstructions so as to have allowed a column on the right and one on the left to have followed immediately after.

Question. At what distance from each other ?

Answer. The distance at that point could not have been greater probably than 150 yards on each side.

Question. Of what strength should those columns have been ?

Answer. Each a division of a corps. I had supposed that the arrangement was that the whole of the 9th corps should have gone in, and the portion of the 5th corps that was massed for its support, and the whole of the 18th corps, to have gone in immediately after.

Question. Was there any other cause, in your judgment, that contributed to the disaster of that day ?

Answer. I cannot state about that. I was not at the point where the mine was exploded. All I know about that is from hearsay.

Question. Did you receive any instructions to make an examination with General Hunt, chief of artillery, as to the front of the rebel line in regard to the placing of the artillery prior to the attack ?

Answer. We had a general order to take charge of that line.

Question. At what time was that order given?

Answer. I forget the date; but it must have been some two or three weeks previously.

Question. Did you make an examination with a view to the springing of this mine, and making this assault?

Answer. Towards the latter part of the time such examination was made. The first order in the beginning of July was to make an examination in reference to a general attack.

Question. Was there any special order given to you and General Hunt to examine the rebel line in front of the 5th corps, with a view of silencing the rebel batteries, while the assault was being made by the 9th corps?

Answer. Yes, sir; there was.

Question. Who issued that order, and at what time was it issued?

Answer. I think it was given to me verbally. I am not certain whether it was by General Meade himself or by his chief of staff.

Question. It was issued by General Meade's authority?

Answer. Yes, sir.

Question. About how long, previous to the time when the assault was made?

Answer. I should think it was about ten days; I am not certain about the time. We had ample time, however, to establish our batteries and put in position all the guns that could be placed in that line.

Question. And if I understand you rightly, the batteries on the rebel right, in front of General Warren's corps, were effectually silenced at the time of the attack?

Answer. Yes, sir; I was enabled, in about a half an hour, to stand on top of the parapet. The enemy's batteries were effectually silenced.

Question. What position did the enemy's batteries occupy that were firing upon our troops in the crater of the mine?

Answer. There were two guns which took a position in a ravine—two field-pieces which were run down there, and which commenced firing about an hour after we had taken possession of the crater; at least that was the first I saw of their firing; they may have fired previously to that time.

Question. Those were the only two guns upon our left which fired upon our troops in the crater?

Answer. Yes, sir.

Question. What other guns of the enemy were there that fired upon our troops in the crater?

Answer. There were some guns over on the right, but I could not see what they were from my position.

Testimony of Major General E. O. C. Ord.

CITY POINT, Va., December 20, 1864.

Major General E. O. C. ORD sworn and examined.

By Mr. Chandler:

Question. What is your rank and position in the army?

Answer. Major general, now in command of the 24th army corps.

Question. What was your command on the 30th of July last?

Answer. I was then in command of the 18th army corps, and of a part of the 10th army corps.

Question. Will you state such facts as may have come to your knowledge, and which you may deem important, in relation to the attack by the 9th corps on the enemy's lines before Petersburg, on the 30th of July last?

Answer. I will read the report which I made of that affair, and then I will answer such additional questions as you may think proper to ask.

HEADQUARTERS EIGHTEENTH ARMY CORPS,
Near Petersburg, August 3, 1864.

GENERAL: In obedience to orders from General Meade (to whom I was ordered to report) the 1st and 3d divisions of the 18th corps were, on the night of the 29th of July, placed in the trenches of General Burnside's front, relieving portions of his command as trench guards, that the 9th corps might prepare to assault the enemy's line next a. m. The 2d division 10th corps, Brigadier General Turner commanding, and the 2d division 18th corps, Brigadier General Ames commanding, were placed in rear of General Burnside's corps as reserve supports, and in positions selected by him. Their orders were to await orders, to be sent as soon as the result of the assault next morning by the 9th corps could decide where supports might be needed.

About 5 o'clock a. m., 30th of July, the mine in front of the 9th corps sprung, and I took my position near General Burnside awaiting the result of his assault, and with an understanding that as soon as his corps could get out, General Turner was to follow his (Burnside's) rear division and support it on the right, beyond our lines. About 6 o'clock, General Burnside told me it was time for General Turner to move, and I directed General Turner accordingly; but the general got ahead of Potter's division, 9th corps, and was obliged to wait until it had passed. To understand the manner of the movement, I quote General Burnside's order, dated July 29, for the assault, which says:

1. "The mine will be exploded to-morrow morning at half past three. * * *
2. "General Ledlie will immediately, upon the explosion of the mine, move his troops forward. * * *
3. "General Wilcox will move his division forward after General Ledlie has passed through the first line of the enemy's works, bearing off to the east. * * *
4. "General Potter will move his division forward to the right of General Ledlie's as soon as it is apparent that he will not interfere with the movement of General Wilcox's division, and will, as near as possible, protect the right flank of General Ledlie's from any attack in that quarter, and establish a line on the crest of a hill which seems to run from the Cemetery hill, nearly at right angles to the enemy's main line, directly in our front. * * *
5. "General Ferrero will move his division immediately after General Wilcox until he reaches our present advance line, where he will remain until the ground in his front is entirely cleared by the other three divisions, when he will move forward over the same ground that General Ledlie moved over, will pass through our lines, and, if possible, move down and occupy the village to our right."

Thus it will be seen that all three of his rear divisions had to follow each the action of those in its front; and I learned afterwards that the passage out and to our front line of breastworks was by a long trench or covered way and through a breach in our works. Hence the movements were slow, and there was delay especially after the enemy had massed his men, and our wounded coming from the front, began to choke this covered way. About half past six a. m., having sent General Turner, commanding my advance division, an order to move forward on the crest of hill to right of Potter, (see the above order directing General Potter to establish a line on the crest of the hill,) near or on the Jerusalem plank road, in reply to this General Turner reported that General Burnside's troops filled the trenches in his front, occupying the crater and blocking up the way. About this time, or shortly after, I received an order directly from General Meade's headquarters, as follows:

"You will at once move forward your corps rapidly to the crest of the hill,

independently of General Burnside's troops, and make a lodgement there, reporting the result as soon as obtained."

This order I sent at once to Generals Turner and Ames. The latter was with his division closing up on Turner, and keeping his men massed for a movement in any direction. General Turner replied:

"The only place I can get out of the lines is opposite the crater. It is already full of men who cannot develop. I shall put in my column as soon as I can. It is impossible, by reason of the topography, to charge in the manner you indicate. I must go in by head of column and develop to the right."

From General Ames I received the following:

"I find that the covered way is the only way of getting to the front. General Turner occupies the road, and it is impossible for me to move until he gets out of my way."

Now, I had not seen the ground, and supposed, all this time, that there were several places of exit and the ground tolerably free from obstructions.

I sent Generals Turner's and Ames's replies to General Meade and went myself to the front, where I found our men were debouching *into* the crater and into a short space of the enemy's trench on each side of it. I met General Turner just from the crater, (only 75 yards off,) and saw Burnside's white and black men needlessly filing into the crater, and into this short line of the enemy's works, under a destructive cross-fire. The enemy, just then, had brought up an additional six-gun battery, and was sweeping the 75 yards of bare up hill, where the 9th corps debouched, with a cross-fire of canister, grape, and musketry. I also saw that the crater and trench adjacent were in a sort of a re-entrant angle of the enemy's work, and that the men who had crowded in them were useless and, in a measure, helpless. The crater was a *big hole*, some twenty feet deep, and was shortly afterwards rendered almost inaccessible by the cross-fire, and the trenches near it were crowded with men who were indisposed or unable to go forward; and I saw that the black troops were charging out *by the flank*, increasing this mass of men huddled under the enemy's fire. I directed General Turner not to put his men in the crater or the trench already filled with men, but to make a charge to the right where the enemy were massing. This he did, and I gave him all the aid in my power; the men climbing up and over our parapet, and dashing towards the enemy's trench in good style. (See Turner's report.) On my return to headquarters of General Burnside I overtook General Grant, and he directed me to say to General Burnside that "no more men should be sent into the crater or trenches of the enemy already filled, but he (General Burnside) should send forward intrenching tools and hold all his men had gained." I did so, and again ordered General Turner to push his whole division out, and to the right. Immediately thereafter—about 8 o'clock—I received from General Turner the following despatch:

"Colonel Bell's brigade, in attempting to gain ground to the right on the enemy's line, was severely met by the enemy's fire, when a regiment of colored troops stampeded and broke through the brigade, carrying it all with them into our line."

This I communicated to General Meade and repeated my orders to Turner to get his other brigade out to attack, but shortly afterwards (before my last order could be communicated) I received orders from General Meade to draw my men all inside our trenches to the rear, and afterwards an order was received to return with my (corps*) to my own front.

I may mention here, that when General Burnside had received the information that his men had occupied the crater, and a part of his command was in front of the crater—not advancing—I wrote the following despatch before I had any order from General Meade:

* Should be *command*.

"HEADQUARTERS EIGHTEENTH ARMY CORPS,

"6½ o'clock—30th.

"GENERAL MEADE: Turner, in my front, reports that Burnside's troops fill our trenches in his front, occupying the crater, the enemy still holding their trenches to the right and left of the crater. Shall I order the divisions (two) of the 18th corps to try and charge the enemy's trenches over the heads of the men. Rifle firing has almost ceased in our front and both parties covering.

"E. O. C. ORD,

"Major General of Volunteers."

The despatch I submitted to General Burnside, and he requested me to wait a few moments and he would have the way cleared. It was shortly after this I received the first order from General Meade to advance independently of General Burnside's troops. After receiving the order from General Meade to draw off my men and go back to my own front, I found that if I drew out the 1st and 3d divisions, 18th corps, which had been placed by General Burnside in his trenches, the trenches would be left too weak, and hence I directed General Carr, commanding these divisions, to remain where he was until night, when General Burnside promised to relieve him. The next day I asked General Burnside for the two (2) divisions left in his trenches, and finding that he could not send them all to me without inconvenience, I telegraphed General Meade that I could get along with the part which had been returned. The whole reported that night or the next morning.

Enclosed you will find reports of division commanders and reports of casualties.

I am, sir, respectfully, your obedient servant,

E. O. C. ORD,

Major General of Volunteers, Commanding.

Major General A. A. HUMPHREYS,

Chief of Staff, Army of the Potomac.

Question. To what do you attribute the failure of that enterprise?

Answer. In the first place the crater of the mine was in a very bad place for a storming party to go in. It was swept by a flanking fire of the enemy; it was up hill; and, as it appeared to me, it was not covered by any of our batteries. The ground to the left and front of the mine was marshy, and covered by bushes and trees. No preparations had been made for our troops to pass out to our right or left. They could only get out by a single long trench or covered way; so that in the slow process of getting 10,000 or 12,000 men up through this narrow space and out through a single opening the enemy had an opportunity to make preparations to meet them. All this produced delay.

There should have been several openings made, and the troops should have attacked the enemy at several points at once. The mine was to have been sprung at half past three o'clock in the morning. But the last division of General Burnside's troops did not get out until nearly eight o'clock; some of the men were not out then. On account of the slow exit of these men, the enemy had an opportunity of pounding them as they came out in small force, by concentrating their fire upon them. That was one cause of failure. Another was that when the men did get out, from what I learn they were not sufficiently disciplined as soldiers to obey orders and advance as directed. The troops that first went out, as I was told, were dismounted cavalry; a very bad specimen of troops.

Question. If I understand you, this crater being too narrow a space through which to push an army successfully for a surprise, there should have been simultaneous attacks made at other points along the line?

Answer. You do not get precisely my idea. The men had to go through a long narrow trench, about one-third of a mile in length, before they got into our extreme outwork, and then they went into this crater, and were piled into that hole, where they were perfectly useless. They were of about as much use there as so many men at the bottom of a well. Afterwards they filed into the trenches on either side of the crater for a small space, and covered themselves there as well as they could. If there had been several places of exit instead of but one, we could have tried the enemy elsewhere, and some of our parties might have been successful if others had been headed off.

Question. Of course this delay did not come under your observation, and the cause of it is not known to you?

Answer. When they had decided to follow in the order of General Burnside's march, one after the other through this one trench, and through one opening, that produced a delay which should have been anticipated. Better provision should have been made for the attack.

By Mr. Loan :

Question. What parts of the enemy's lines were open to attack with any chance of success?

Answer. I think it probable success might have been attained on the left and right of the crater, at the distance of half a mile, if our parapets had been opened during the night, and parties of men held there in readiness had dashed out upon the nearest works of the enemy, immediately after the explosion; for we learned afterwards that upon the explosion the enemy abandoned several of their batteries nearest our works, thinking they were also mined.

Question. What forces of ours were opposite those points where you think attacks might have been successfully made?

Answer. I had all of my available troops directly in rear of General Burnside's command, and reported to him and obeyed his directions by General Meade's orders. General Warren, I think, remained with his command on the left of General Burnside. There were no troops prepared on the right strong enough to make an attack. General Mott, who took my place there, had, I think, only one division, though quite a large one, to occupy the place of a much larger force while it was relieved for the attack. And it would not have been advisable to have had his troops attack.

Question. We then had no men on the right who could have made an attack there?

Answer. The answer I gave in regard to what might have been done referred to arrangements to have been made a day or so previous, by which troops could have been massed opposite the different places of exit, and then have gone out as soon as required. But the troops were massed all in this one place, along this covered way, a portion of them in front of this work, and the balance in rear by divisions, so that they were all in a column.

Question. That relates to the 9th corps, and to your corps in their rear?

Answer. Yes, sir.

Question. But your remark would not apply to General Warren's command?

Answer. I should not suppose it would apply to his command, if arrangements had been made beforehand.

Question. What I mean is, the situation of General Warren's command as it was on the morning of the 30th of July. Were his troops in a situation where they could have attacked the enemy on our left?

Answer. I really do not know, because I am not aware how his troops were located. If they could have attacked by prearrangement, I think they were in a situation to have attacked.

Question. It would have been necessary to have arranged the troops, to have

attacked on the right and left, in assaulting columns at half a mile distance from the crater, in connexion with the main assault through the crater?

Answer. Yes, sir; that suggested itself in answer to your question. We can never tell before an event takes place what might succeed half so well as we can afterwards, and a criticism that is advanced after the occurrence should, of course, be received with all this allowance.

Question. The cause of the failure was chiefly owing to the want of a proper outlet or *debouchment* for the troops?

Answer. Not entirely.

Question. No, not entirely, but chiefly?

Answer. My answer was intended to cover more than the fact of the *debouchment*, not being a proper one. The massing the troops and sending them out by such a long, narrow covered way is what I particularly referred to, and which caused them to be very slow in their movements.

Question. Who decided upon the locality of your troops, when they were ordered to be massed in the rear of General Burnside's corps?

Answer. I do not know positively, but my impression is that, the mine being General Burnside's idea, and he having been at work at it for some time, he made nearly all the arrangements for the explosion and the attack.

Question. Did he give directions for the location of your troops?

Answer. Yes, sir; he located them himself.

Question. Were they massed by his directions?

Answer. By his selection; for I sent my officers to report to him, and to get their situations from him.

Question. How long was it after the explosion of the mine before the head of General Ledlie's column entered the crater?

Answer. That I do not know; because I was not then near enough to the mine to see that; I was back with General Burnside.

Question. Have you any knowledge what troops of the enemy those were that opened this cross-fire upon our advancing columns? What I want to get at is, whether they were those troops that occupied the intrenchments, or whether they were drawn from some other parts of the enemy's lines.

Answer. I cannot speak positively; but my impression is that they came in from other points. They almost always keep troops in reserve along their lines, so that when an attack is made, they can dash at once towards the threatened point.

Question. What was the effect of the explosion upon the enemy's troops in the trenches?

Answer. I think, from what I learned afterwards, that those batteries nearest the mine were partially abandoned, but that the trenches, under which it was not expected a mine could be easily built, were not abandoned except in the immediate vicinity of the crater.

Question. Do you know whether the troops in the enemy's trenches opened fire immediately upon our advancing column, or was there some delay?

Answer. I learned from others that there was some little delay; I do not know positively.

Question. Can you state whether our troops were enabled to pass across the space between our line and the crater before they were met by any fire from the enemy?

Answer. That I can only state from what others told me; I did not go to the front until I found that my divisions were impeded, and that difficulties were encountered in carrying out my orders.

Question. Were they impeded by the fire from the enemy's batteries on the right, or on the left, that were sweeping across the space between our lines and the crater?

Answer. The enemy's battery that I spoke of in my report took a position

on the right of the crater as we faced the enemy's lines; there were other batteries a little more removed playing on the left also. The most destructive fire, however, was musketry and grape.

Question. From what locality?

Answer. From the right and left, and front, apparently; but more particularly from the right.

Question. How was the enemy's infantry protected?

Answer. The nature of the ground to the right as we went out was such that our intrenchments fell off down into a swamp or bottom. There were there bushes and tall trees in front of us, and we could not see anything in that direction thirty or forty yards off, and the enemy could form there, entirely screened, and in such position as to be in flank and in a measure in rear of those going from our works to the crater.

Testimony of Brevet Major General Edward Ferrero.

CITY POINT, VA., December 20, 1864.

Brevet Major General EDWARD FERRERO sworn and examined.

By Mr. Loan:

Question. What was your rank and position in the army on the 30th of July last?

Answer. I was then a brigadier general, commanding a division.

Question. What is your present rank?

Answer. Brevet major general.

Question. In what corps was your command last July?

Answer. It was the fourth division of the 9th army corps, and was composed of colored troops.

Question. We have been instructed to inquire into the operations of the 30th of July last, the springing of the mine, the attack by the 9th corps, &c. Will you state, in the first place, what you know in relation to the charging of the mine that was exploded on that day?

Answer. I know nothing about that; I had no connexion whatever with it.

Question. Had you, previously to the 30th of July, drilled your division with a view to making an assault after the springing of the mine?

Answer. I had, for over three weeks.

Question. What was the condition of your troops at that time, as to their spirit and morale?

Answer. They were in fine condition—better than any other troops in the army for that purpose. We were expecting to make this assault, and had drilled for weeks, and were in good trim for it.

Question. Had you made any examination of the ground and other preliminary arrangements with a view to the assault?

Answer. Before the commencement of the mine I had had a conversation with General Burnside, as it was intended I should make the assault, and submitted to him a plan, which is already in the report. I had surveyed the ground, made an examination, and given my plan of attack, which had been approved by General Burnside, and it was submitted to General Meade.

Question. Will you give the outlines of that plan—how the advance was to be made, and in what form?

Answer. The mine was under a considerable fort upon the right. There was a small fort, a short distance, probably six hundred yards to the left, with three or four guns. My idea was to make an assault at the moment of the explosion of the mine between those two points. I wanted to advance one brigade, which

was to be the leading brigade, then divide it in two parts, one portion to go to the right and sweep the enemy's lines in that direction, and the other portion to go down the left and sweep the lines in that direction. The other two brigades of the division were to march forward in column, and carry the crest of Cemetery hill.

Question. Your object was to cross the enemy's works between the two forts?

Answer. Yes, sir, and not go over the point where the explosion was to take place, because the mass of earth that would be thrown up there would impede any troops. The object was to gain every moment at the explosion of the mine. My idea was to clear the enemy's line of works, and thus prevent a fire in our rear, as well as in our front.

Question. At what time was it decided not to use your division for that purpose?

Answer. The night before the assault I received the first intimation that they were not to be so used.

Question. What troops were used for that purpose?

Answer. The first division of the 9th army corps, under General Ledlie, was assigned the lead of the assault.

Question. What was the condition of those troops at that time? Had they been engaged in any exhaustive labors?

Answer. They were not the troops to put in at that time, from the very fact that they had been constantly under fire for a long period—so much so that it had become a second nature with them to dodge a bullet; from having been in such close contact with the enemy they had acquired that habit.

Question. Do you know anything about the arrangement for the *debouchment* of that command?

Answer. Every arrangement was made that it was possible to make under the circumstances, as it was necessary that we should do everything without giving information to the enemy. Nothing more could have been done without exposing our plans.

Question. Then one of the main elements of success in this enterprise consisted in the surprise of the thing?

Answer. Undoubtedly.

Question. Was it desirable in that connexion that our troops should move very rapidly after the explosion?

Answer. That was certainly very necessary.

Question. To what extent were the abattis removed, and the parapets levelled, in front of our own works, in order to enable the troops to *debouch* rapidly?

Answer. That point was probably the nearest point to the enemy upon our whole line, and it was utterly impossible to do anything more than was done. There was enough done to enable the troops to get over with all the necessary rapidity required at that moment.

Question. Did the troops move rapidly forward after the mine was sprung?

Answer. I was where I could witness the column movement. By my time they moved from five and a half to six minutes after the explosion. They could not move sooner on account of the concussion of the explosion, which would naturally prevent their going forward for a few moments.

Question. Have you any knowledge as to the effect produced by the explosion upon the enemy's troops in the vicinity of the mine?

Answer. I can state nothing further than that they seemed to be perfectly paralyzed for quite a long space of time.

Question. Was there any firing upon the part of the enemy upon our troops as they crossed over the space between our outer works and their lines?

Answer. The firing was very light on the first column that went up.

Question. Can you assign any reason for the confusion that ensued after the assault had been begun, and our troops had entered the crater?

Answer. Yes, sir. In the first place the nature of the ground was such as to cause confusion among men who had been accustomed to seek shelter under fire for five or six weeks. The crater was a hole some twenty-five or thirty feet deep, and fifty or sixty feet broad. When the men got into that hole they became confused, and it was utterly impossible to get them out. That was one of those things which will happen with the best of troops.

Question. Was there any remedy for that misfortune, when the troops refused to come out?

Answer. I am hardly at liberty to say. I was not in command of the army.

Question. What do you think could have been done?

Answer. We all differ in opinion.

Question. That is true; but we ask your opinion, as a military man.

Answer. I think myself that if the assault had been made a little to the left it would have been better. There would not have been so much impediment.

Question. I refer to the time when General Ledlie's division had been thrown into this inextricable confusion, in the bottom of this hole, and the men refused to come out from the shelter afforded them there; was there, after that occurrence, any chance to remedy the condition of affairs by any other movements which could have been made?

Answer. I cannot answer that question, because, not being in command of the army, I was not aware of the condition of the enemy, the number of troops on either side, their position, &c., all of which things it is supposed the general commanding is informed of.

Question. I had supposed you might have seen what force the enemy afterwards developed, and what his means of defence were.

Answer. I have since heard what his force was.

Question. You do not know what he actually did on the ground?

Answer. Yes, sir. I was there and saw it.

Question. Could we have used our forces at other points with any probability of gaining a success?

Answer. I think an attack made upon some other portions of the enemy's lines would probably have been successful.

Question. Upon what portions?

Answer. There were no other portions available except in front of the 5th corps.

Question. Have you any means of knowing from what points the enemy drew the troops that he concentrated upon our forces in the crater of the mine?

Answer. Nothing more than from the reports of the signal officers, who saw them moving their troops in the vicinity of the town after the assault was made, and from the heavy fire we sustained there.

Question. There is no doubt about there being a heavy concentration of troops there. What I want to ascertain is from what localities those troops of the enemy were drawn.

Answer. It is reported that they were drawn from in front of the 5th corps.

Question. If they were drawn from in front of the 5th corps, they must have weakened their lines there?

Answer. Yes, sir.

Question. And you think it probable that a vigorous attack there might have been successful?

Answer. Yes, sir, it might.

Question. It would have had the effect of relieving the troops in the crater from the severe cross-fire?

Answer. Yes, sir.

Question. Was it possible for General Ord to have made any judicious movement upon the right, if he had been so ordered, so as to have compelled the attention of the enemy to the right of the crater?

Answer. I do not think the nature of the ground would have admitted anything of the kind. I had surveyed the whole of that ground with a view to this assault, and I knew all about it.

Question. Will you state, as a military man, whether you think the dangers of the disaster were enhanced by the narrowness or insufficiency of the *debouchement* prepared for the troops of the 9th corps?

Answer. I do not think so. I think the great impediment was in front.

Question. The going into that hole, and being subjected to that cross-fire?

Answer. Yes, sir; the troops moved very handsomely up to that position.

Question. After the third division of the 9th corps had gone in, your division was then ordered to advance?

Answer. Yes, sir.

Question. What was the condition of the white troops at the crater and beyond, at the time you were ordered to make your advance?

Answer. They were without any organization; just one mass of human beings seeking shelter in the bomb-proofs of the enemy.

Question. About what number of men composed the three divisions that preceded yours?

Answer. I could not tell you at this time. I could give the strength of my own division.

Question. At what time in the day did you receive orders to advance?

Answer. About an hour and a half after the explosion of the mine.

Question. What was the strength of your division?

Answer. I had four thousand three hundred men for duty.

Question. Please narrate what occurred after your division began to move.

Answer. I received an order to advance my troops and pass the white troops which had halted, and move on and carry the crest of the hill at all hazards. I had but a few paces to move to our outer breastworks. Previous to that I had sent a staff officer to ascertain the condition of affairs at the front. From his report I did not think it advisable to move my division in, as there were three divisions of white troops already huddled together there. I reported to Colonel Loring, of General Burnside's staff, who requested me to halt until he could report to General Burnside. I refused to do so, when he gave me an order in General Burnside's name to halt, and I did so. He then went off to report to General Burnside, and came back and reported that the order was peremptory for me to carry my division through at all hazards. I then started with my division; they went in magnificently under a most galling fire; they passed beyond the white troops, captured the only prisoners captured that day, some two hundred and fifty to three hundred, together with a rebel stand of colors, and recaptured a stand of our colors belonging to a regiment of white troops of the 9th army corps. They were a little broken by going through the mass of white troops there, and the colonel in command of the first brigade of the division proceeded to reform for the assault. There was a dismounted cavalry regiment, I think of the second division of the 9th corps, a little off to one side. As my troops started, the color guard of that regiment came back on the double quick, broke through the ranks of my leading brigade, which of course caused my negroes to break. My troops came back in very bad order. Finding no shelter there, as the white troops had all the shelter, they came back to our main line, inside of which they were reformed, and there they remained the balance of the day. As my troops went in so gallantly under a most galling fire, I maintain that, had they led the assault when there was comparatively no fire, nothing could have stopped them until they got into Petersburg.

Question. Where were the batteries located which you found to be most effective against your troops?

Answer. There was a battery off to the right of the crater, beyond a ravine,

which enfiladed the line; then there was a battery on the left which also enfiladed the line.

Question. What was the strength of the battery to the left?

Answer. Two pieces of field artillery.

Question. Did it move into position after the mine was sprung?

Answer. No, sir; the men abandoned it at the time of the springing of the mine, and then came back.

Question. Was that battery in front of General Warren's command?

Answer. No, sir; it was on what was still the old front of the 9th corps.

Question. Were those the only batteries that were effective?

Answer. Those two were the only batteries that enfiladed the line; we had a fire directly in front, and from a battery a little to the left of the centre.

Question. Were those field guns in front brought into position after the springing of the mine?

Answer. I think they were permanent batteries.

Question. What was the reason for changing the plan of allowing your division to lead the assault, as had been first contemplated?

Answer. I do not know the reason; I only know that General Meade opposed it, and that General Grant approved his decision.

Testimony of Lieutenant General U. S. Grant.

CITY POINT, VA., December 20, 1864.

Lieutenant General U. S. GRANT sworn and examined.

By Mr. Chandler:

Question. Will you give the committee such information as you may deem important in regard to the action before Petersburg, on the 30th of July last?

Answer. As you are aware, I made a feint on the north side of the James river, which I intended to convert into an attack if everything should prove favorable. By that movement the attention of the enemy was called to that side of the river, causing them to concentrate there. They were so well fortified there that an advance on that side could not be made without great sacrifice of life.

General Burnside had, prior to this, made a mine in front of the 9th corps, which I would not allow to be exploded until such time as it could be used advantageously. Finding that the principal part of the enemy's forces had been drawn to the north side of the James, I telegraphed to General Meade that then was the time to charge the mine and explode it, and directed him to make preparations to assault. My despatch gave no details at all how this was to be done. I left that to him, knowing him as I did to be fully capable of determining when and what ought to be done.

He prepared an order for assault, which was submitted to and approved by me. I think now it was all that we could have done; I think he could not have done better.

I was over on the north side of the river when these arrangements were made. I came back to the south side of the river before the explosion took place, and remained with General Meade until probably a half or three quarters of an hour after the springing of the mine. I then rode down to the front; that is, I rode down as far as I could on horseback, and then went through to the front on foot. I there found that we had lost the opportunity which had been given us.

I am satisfied that if the troops had been properly commanded, and been led in accordance with General Meade's order, we would have captured Petersburg with all the artillery and a good portion of its support, without the loss of 500

men. There was a full half hour, I think, when there was no fire against our men, and they could have marched past the enemy's intrenchments just as they could in the open country.

But that opportunity was lost in consequence of the division commanders not going with their men, but allowing them to go into the enemy's intrenchments and spread themselves there, without going on further, thus giving the enemy time to collect and organize against them. I think I can say nothing more on that point.

I blame myself a little for one thing. General Meade, as I stated, on my telegraphic despatch from the north side of the James river, made his orders most perfectly. I do not think that now, knowing all the facts, I could improve upon his order.

But I was informed of this fact: that General Burnside, who was fully alive to the importance of this thing, trusted to the pulling of straws which division should lead. It happened to fall on what I thought was the worst commander in his corps. I knew that fact before the mine was exploded, but did nothing in regard to it. That is the only thing I blame myself for. I knew the man was the one that I considered the poorest division commander that General Burnside had—I mean General Ledlie.

By Mr. Loan.

Question. There has been a great deal of controversy in regard to the sufficiency of the *debouchment* prepared by General Burnside for the egress of his troops after the explosion of the mine?

Answer. That I could not swear to exactly. I went beyond his *debouchment*, but did not think to note it. But I am satisfied that he did not make the *debouchment* that he was ordered to make. I know that as well as I know anything that I cannot exactly swear to. I went beyond it myself, and on my return to the rear ordered the troops back.

Question. I suppose the success of this enterprise was dependent in a great measure upon the surprise of the enemy, caused by the explosion of the mine, and prompt movements afterwards to avail yourself of the distraction occasioned by it?

Answer. It all depended upon that.

Question. Was there not some danger of apprising the enemy of the contemplated movement, by undertaking to level the parapets and remove the abattis and other obstructions in front of our line?

Answer. Not at all. That could be done entirely under cover of the night. After dark we could take down any of our parapets and remove our abattis without their noticing it.

Question. So far as you are advised in the matter, was not a part of the disaster owing to the slow movement of our troops in passing over the ground?

Answer. I think if I had been a corps commander, and had had that in charge, I would have been down there, and would have seen that it was done right; or, if I had been the commander of the division that had to take the lead, I think I would have gone in with my division. We have a great many officers here who would have done the same thing.

Question. Did the slowness of the movement tend to promote the disaster?

Answer. I do not think that that alone had any effect at all.

Question. What, then, do you think was the cause of the disaster?

Answer. I think the cause of the disaster was simply the leaving the passage of orders from one to another down to an inefficient man. I blame his seniors also for not seeing that he did his duty, all the way up to myself.

Question. You think that the opportunity for success passed by owing to the confusion of the troops in consequence of the inefficiency of that division commander?

Answer. Yes, sir. As I understand it, the troops marched right into the breach caused by the explosion without there being a single division commander there. They had no person to direct them to go further, although the division commanders were directed in the most positive terms to march to what is called Cemetery hill, which would have given us everything.

Question. Speaking of those orders, was it judicious to direct the main advancing column to proceed directly to Cemetery hill without any regard to the enemy on their right and left?

Answer. Cemetery hill commanded the rear of their intrenched line; it commanded everything.

Question. The troops had to pass over considerable ground to reach Cemetery hill?

Answer. Only 300 or 400 yards.

Question. Then to accomplish that object, you do not think it would have been necessary to have taken possession of the enemy's batteries and intrenchments on the right and left of the crater of the mine?

Answer. Not at all. If they had marched through to the crest of that ridge they would then have taken everything in rear. I do not think there would have been any opposition at all to our troops had that been done. I think we would have cut off entirely those of the enemy to our right, while those on the left would have tried to make their escape across the Appomattox.

Question. There has been something said in regard to the changing of General Burnside's plan of putting his division of colored troops in the advance.

Answer. General Burnside wanted to put his colored division in front, and I believe if he had done so it would have been a success. Still I agreed with General Meade in his objection to that plan. General Meade said that if we put the colored troops in front (we had only that one division) and it should prove a failure, it would then be said, and very properly, that we were shoving those people ahead to get killed because we did not care anything about them. But that could not be said if we put white troops in front. That is the only point he changed, to my knowledge, after he had given his orders to General Burnside. It was then that General Burnside left his three division commanders to toss coppers or draw straws which should and which should not go in front.

By Mr. Julian :

Question. That change was made the evening before the assault, was it not?

Answer. I cannot say whether it was the evening before the explosion or twenty-four hours earlier.

Question. Was General Burnside's plan submitted to you for consideration?

Answer. He had no plan; he had merely to execute an order.

Question. He desired to use his colored troops for the advance?

Answer. Yes, sir; and that part was changed, I thought then very properly, and I think so yet; for we had but one division of colored troops in the whole army about Petersburg at that time, and I do not think it would have been proper to put them in front, for nothing but success would have justified it.

Testimony of Lieutenant Colonel Henry Pleasants.

WASHINGTON, D. C., January 13, 1866.

Lieutenant Colonel HENRY PLEASANTS sworn and examined.

By the chairman :

Question. Were you in the army of the Potomac at the time the mine was sprung before Petersburg, on the 30th of July last; if so, in what capacity?

Answer. I was there at that time. I was then lieutenant colonel of the 48th Pennsylvania volunteers, and commanding the regiment at the time the explosion took place.

Question. What connexion did you have with the construction of the mine?

Answer. I proposed it and executed the work. I had the whole charge of everything connected with its construction.

Question. Will you state who originated the mine, and what was done in regard to it?

Answer. I was then commanding the first brigade of the second division of the 9th corps. That corps was then under the command of Major General Burnside. While commanding the brigade I frequently had occasion to go to the front line. I noticed a little cup of a ravine near to the enemy's works. I having been a mining and civil engineer many years before the war, it occurred to me that a mine could be excavated there. I examined the ground, and after I had satisfied myself that it could be done, I spoke to the officer next in rank above me, Brigadier General Potter, commanding the division, and explained to him what I proposed to do and how I proposed to do it, and what would be the effect of an explosion of that kind upon the enemy. He received the idea favorably, and wrote a note to General Burnside in relation to it. General Burnside sent for me, and I explained to him carefully the mode of ventilating the mine and everything about it. He seemed very much pleased with the proposition, and told me to go right on with the work.

Question. Can you fix the time when you mentioned the matter to General Burnside, when you commenced the work, &c.?

Answer. The work was commenced at 12 o'clock noon on the 25th of June, 1864. I saw General Burnside the night previous, and commenced the mine right off the next day.

Question. Did you have any communication with any other commanders on the subject?

Answer. No, sir.

Question. About how many men did you employ in the work?

Answer. My regiment was only about four hundred strong. At first I employed but a few men at a time, but the number was increased as the work progressed, until at last I had to use the whole regiment, non-commissioned officers and all. The great difficulty I had was to dispose of the material got out of the mine. I found it impossible to get any assistance from anybody; I had to do all the work myself. I had to remove all the earth in old cracker boxes. I got pieces of hickory and nailed on the boxes in which we received our crackers, and then iron-clad them with hoops of iron taken from old pork and beef barrels.

Question. Why were you not able to get better instruments with which to construct so important a work?

Answer. I do not know. Whenever I made application I could not get anything, although General Burnside was very favorable to it. The most important thing was to ascertain how far I had to mine, because if I fell short of or went beyond the proper place the explosion would have no practical effect; therefore I wanted an accurate instrument with which to make the necessary triangulations. I had to make them on the furthest front line, where the enemy's sharpshooters could reach me. I could not get the instrument I wanted, although there was one at army headquarters, and General Burnside had to send to Washington and get an old-fashioned theodolite, which was given to me.

Question. Do you know any reason why you could not have had the better instrument which was at army headquarters?

Answer. I do not. I know this—that General Burnside told me that General Meade and Major Duane, chief engineer of the army of the Potomac, said the thing could not be done; that it was all clap-trap and nonsense; that such a

length of mine had never been excavated in military operations, and could not be; that I would either get the men smothered for want of air, or crushed by the falling of the earth; or the enemy would find it out, and it would amount to nothing. I could get no boards and lumber supplied to me for my operations. I had to get a pass and send two companies of my own regiment with wagons outside of our lines to rebel saw-mills and get lumber in that way, after having previously got what lumber I could by tearing down an old bridge. I had no mining picks furnished me, but had to take common army picks and have them straightened for my mining picks.

Question. Was General Burnside the only officer who seemed to favor the mine?

Answer. The only officer of high rank, so far as I learned. General Burnside, the corps commander, and General Potter, the division commander, seemed to be the only high officers who believed in it.

Question. How long from the time that you commenced the mine did it take you to finish it?

Answer. I finished the whole thing, lateral galleries and all, ready to put the powder in, on the 23d of July.

Question. How long would it have taken you had you been supplied with the proper tools and instruments?

Answer. I could have done it in one-third or one-fourth of the time. The greatest cause of the delay was taking the material out.

Question. How far did you have to carry it?

Answer. The whole length of the mine, and to where it could be deposited. And every night I had to get the pioneers of my regiment to cut bushes and cover it up where it had been deposited, otherwise the enemy could have climbed up the trees in their lines and seen the pile of newly excavated earth.

Question. What was the length of the mine?

Answer. The main gallery was 510 $\frac{8}{10}$ feet in length; the left lateral gallery was 37 feet in length, and the right lateral gallery was 38 feet. The magazines were to be placed in the lateral galleries.

Question. What were the dimensions of the galleries?

Answer. They varied at different places. I suppose the average was 4½ by 4½ feet.

Question. Did the enemy discover that you were mining there?

Answer. Deserters came into our lines from the enemy, who stated that they had found out where the mine was, and were trying to countermine. They said that some deserters from the 5th corps in our army had told them about it. General Burnside ordered me to stop all work on a certain day on that account, and to listen for one day; but not hearing anything of the enemy's working, we resumed our work. I did not hear them working until I got right under the fort. They did a great deal of hammering. While I was propping up the mine that we had dug, I made no noise. I had the timber all framed and notched outside of the mine, and it was put together by hand, without any blows.

Question. Was the mine placed directly under the fortification, or close by it?

Answer. It was exactly under it, except that the right lateral gallery made a little circular direction on account of avoiding a shaft which we supposed the enemy were making near by. It did not move out of line much, so that when the explosion took place it would tear up all around there, any how.

Question. What amount of powder was used?

Answer. I called for twelve thousand pounds; they gave me eight thousand.

Question. What means did you take to consume the powder, so that it would have the proper effect?

Answer. I had bags of sand interspersed with logs. There was no tamping between the magazines; it was left all open there, so that there might be oxygen

enough for the combustion of the powder. Outside of the lateral galleries, in the main gallery, it was tamped.

Question. What means did you use to insure the explosion of the powder?

Answer. I used three lines of fuze, called the blasting fuze. I asked for fuze, and they sent me this common blasting fuze. There were troughs running from one magazine to the other, half filled with powder; and then from where the two lateral galleries joined there were two troughs with fuzes in them. The troughs were half filled with fine powder; then from a certain distance out there was nothing but three fuzes, without any powder. The fuze I received was cut in short pieces; some of them are only ten feet long.

Question. Why was that?

Answer. I do not know.

Question. Was not that an objection to it?

Answer. A great objection.

Question. Was there any danger that it would not communicate at those parts where it was joined?

Answer. It did not, and had to be relighted.

Question. Who had the courage to go down into the mine and relight it?

Answer. I had a lieutenant and a sergeant with me in the mine when I lighted it the first time.

Question. How far in did it go out?

Answer. I had a fuze about ninety feet long, and it burned about forty feet—the whole three fuzes.

Question. How long did you wait to find out whether it would explode?

Answer. I waited from quarter after three, the time it was first lighted, until quarter after four, when it was relighted, and exploded at sixteen minutes to five.

Question. Have you been accustomed to use these fuzes in your engineering work?

Answer. Not a great deal; I had seen it done; my province was to do the instrumental work and surveying.

Question. Is there generally much uncertainty about the ignition of powder by means of these fuzes?

Answer. No, sir, unless they are spliced, and then they are very uncertain.

Question. Could you not procure fuzes that were not spliced?

Answer. It was too late after the fuzes came. The mine was prepared and ready for the powder to be put in on the 23d of July, and the enemy was trying to find me out all this time; but I could not get powder to put in, or permission to put it in, until the 28th or 29th.

Question. What reason was given you for that?

Answer. No reason at all; they were not ready, that was all. General Burnside told me he had not permission yet to explode it. I was afraid the enemy would find me out that week.

Question. After you had commenced that mine, and before its completion, could you not have obtained fuzes of the proper quality from coal mines and other places?

Answer. These fuzes were sufficiently good if they had not been cut up.

Question. Was there any difficulty in obtaining fuze that was not spliced?

Answer. When it came it was too late. Besides, as it turned out, it was better that it went out then than if it had gone off at half past three.

Question. I am endeavoring to ascertain whether there was any carelessness in regard to this fuze; to ascertain what reason military men could give for spending so much time on a mine, and then not having their powder and fuze of the proper quality ready when the mine was ready. Whose fault was that?

Answer. I presume this fuze, like the powder, was stored at Fortress Mon-

roe. They sent just whatever they had. It hardly ever happens that they require fuze for that distance.

Question. Then ought they not to have taken special pains to have obtained it, for they knew how long the mine was to be ?

Answer. Well, it was not done.

Question. They could have brought other powder from Fortress Monroe in less than twenty-four hours ?

Answer. Yes, sir, in a day at least. I do not know why they did as they did.

Question. You state that you prepared three fuzes and laid them ?

Answer. Yes, sir.

Question. Why was that ?

Answer. I wanted to make a certain thing of it ; but all three of the lines were spliced, and all three went out. The whole of the tamping, putting in the powder and everything, was completed at 6 p. m. on the 28th of July, and remained there until it was exploded on the morning of the 30th of July ; and the powder remaining there a day and a half in the mine, of course became damp.

Question. Did it not require some nerve to go in there and relight those fuzes ?

Answer. At first it did ; but afterwards we felt certain that the reason the mine did not explode was that the fuzes had gone out.

Question. Who went in to relight them ?

Answer. Lieutenant Jacob Douty, 1st lieutenant company K, 48th Pennsylvania volunteers, (he has since been mustered out,) and Sergeant Henry Rees, now 2d lieutenant company F, 48th Pennsylvania volunteers.

Question. They volunteered to go in ?

Answer. Yes, sir, but I would not let them go in at first, until I felt convinced of the cause of the failure to explode.

Question. Had you been furnished with all the facilities in the power of those in charge there, to have completed and exploded the mine, how long would it have taken you from the commencement until the mine was completed ?

Answer. I think about twelve days.

Question. Were you present when the mine was exploded ?

Answer. Yes, sir ; my regiment having been engaged in constructing the mine, was not in the battle, but I volunteered on General Potter's staff, and was through the engagement, and was there at the time of the explosion.

Question. What effect did the explosion seem to have on the enemy ?

Answer. It completely paralyzed them.

Question. What did the enemy do ?

Answer. Those that were not killed ran away.

Question. What effect did it have on the next tier of fortifications of the enemy ?

Answer. There was no other tier—nothing beyond that. There was a partially completed little earthwork beyond, but nothing in it.

Question. What in your judgment was the cause of the failure of that enterprise ?

Answer. I have thought of that a great deal. There were several causes for the failure. The first one and immediate one was the failure of the first division of the 9th corps to go beyond the enemy's works. The whole of them, or a great portion of them, went up very promptly and occupied the enemy's works. There was nothing to resist them ; but they remained there and did not go beyond ; and when the other divisions came up, having orders to go through the same gap, the second division to form on the right of the first, and the third division to form on the left of the first, and to go on to Cemetery hill—when the other divisions came into the crater and that portion of the enemy's works

which the first division occupied, they got all mixed up; they were all in a medley. That was the immediate reason of the failure.

Question. Suppose they had gone promptly through and taken possession of the heights in force, what then would have been the effect?

Answer. The enemy must have evacuated their line, or else we would have cut their army in two. I stated in my report that there was no cannon shot fired, as I thought, for an hour—I think it was two hours, but I will say one—from the left, and from the right but very few scattered shots, and no infantry firing from the front for half an hour; from the left for twenty minutes, and a few far to the right.

Question. You have stated the immediate reason of the failure; what was the more remote reason?

Answer. Another reason was that the troops were not massed sufficiently near to our breastworks. It was feared that the explosion would throw up a great deal of debris and boards and everything of that kind into the air, and injure our men when they came down; and although I urged it upon General Burnside to mass them nearer the breastworks, still he would not agree to it for fear the men would be injured. The consequence was that when the second brigade of the second division of the ninth corps came up in the morning, they came up by the flank, just straggling along, and not together, as they would have done if they had been right close up to the line.

By Mr. Loan :

Question. Did you testify as a witness before the court of inquiry which was ordered to investigate this matter by the commander of the army of the Potomac?

Answer. No, sir, I was on leave of absence then, and was not called.

Question. Will you state the circumstances under which that leave of absence was obtained?

Answer. I made application for leave of absence to attend to private business, and it was granted me by General Meade.

Question. Had it in any way for its object to avoid your testimony being given there?

Answer. Well, I did not want to go before the board; I thought no good would come of it; it would only make me enemies, and I thought it better as long as I remained in the army that I should not go before the board. Therefore I made application for leave of absence.

Question. Who granted that leave of absence?

Answer. General Meade was the only person who had authority to grant it.

Question. Have you any reason to believe that General Burnside was aware of your disinclination to testify as a witness before that board?

Answer. General Burnside was not there.

Question. I should have said General Meade; had he any reason to know it?

Answer. I do not know.

Question. Why was it you did not wish to testify? Did you or not deem your knowledge of the facts material to the investigation of that affair?

Answer. No, sir, I did not. My only reason was that I thought perhaps my testimony might be injurious to some of the general officers; and as the failure was a fact and it could not be remedied, no good would come of it if I did testify, and it might have been the means of losing me some friends and making me some enemies. That was the reason I did not wish to testify. I have a copy of my report here, to which I have referred while giving my testimony, for the purpose of being correct in reference to dates, &c.

Question. Will you furnish the committee with a copy of that report?

Answer. I will, sir.

The following is a copy of the report referred to :

HEADQUARTERS 48TH PENN'A VETRRAN VOLUNTEERS,
Near Petersburg, Va., August, 1864.

COLONEL: I have the honor to submit the following report, relating to the mine I excavated in front of the second division of the 9th corps.

It was commenced at 12 o'clock m. the 25th of June, 1864, without tools, lumber, or any of the materials requisite for such work. The mining picks were made out of those used by our pioneers; plank I obtained, at first, by tearing down a rebel bridge, and afterwards by sending to a saw-mill, five or six miles distant. The material excavated was carried out in hand-barrows made out of cracker boxes. The work progressed rapidly till the 2d of July, when it reached an extremely wet ground; the timbers gave way and the gallery nearly closed, the roof and floor of the mine nearly meeting. Retimbered it and started again. From this point had to excavate a stratum of marl, whose consistency was like putty, and which caused our progress to be necessarily slow. To avoid this, I started an inclined plane, and in about one hundred feet rose thirteen and a half feet perpendicularly.

On the 17th of July the main gallery was completed, being five hundred and ten and $\frac{6}{10}$ feet in length. The enemy having obtained some knowledge of the mine, and having commenced searching for it, I was ordered to stop mining, which was, however, resumed on the 18th of July by starting the left lateral gallery. At 6 p. m., July 18, commenced the right lateral gallery; but as the enemy could be heard very plainly working in the fort over us, I caused this gallery to be excavated a little beyond and in rear of their work, and gave to it a curved line of direction. The left gallery, being thirty-seven feet long, was stopped on midnight on Friday, July 22; the right gallery, being thirty-eight feet long, was stopped at 6 p. m., July 23. The mine could have been charged and exploded at this time. I employed the men, from that time, in draining, timbering, and placing in position eight magazines, four in each lateral gallery. Having received the order to charge the mine on the 27th of July, I commenced putting in the powder at 4 p. m., and finished at 10 p. m. The tamping was begun at 10 p. m., July 27, and completed at 6 p. m., July 28. Thirty-four feet of main gallery was tamped, and ten feet of the entrance of each of the side galleries; but the space between the magazines was left untamped.

I received orders from corps headquarters, on the 29th of July, to fire the mine at half past three a. m., July 30. I lighted the fuse at 3.15 a. m., and having waited till 4.15 a. m., an officer and sergeant of my regiment volunteered to go in and examine into the cause of the delay, and found that the fire had stopped where the fuzes were spliced. They relighted it, and at sixteen minutes of five the powder exploded.

The charge consisted of three hundred and twenty kegs of powder, each containing about twenty-five pounds. It was placed in eight magazines, connected with each other by troughs half filled with powder. These troughs from the lateral galleries met at the inner end of the main one, and from this point I had three lines of fuzes for a distance of ninety-eight feet. Not having fuzes as long as required, two pieces had to be spliced together to make the required length of each of the lines.

The mine was ventilated at first by having the fresh air go in along the main gallery as far as it was excavated, and to return charged with the gases generated by the breathing and exhalation of the workmen, by the burning of the candles, and by those liberated from the ground, along and in a square tube made of boards, and whose area was sixty inches. This tube led to a perpendicular shaft twenty-two feet high, out of which this vitiated air escaped. At the bottom of this shaft was placed a grating in which a large fire was kept burning continually, which by heating the air rarefied it and increased its cur-

rent. Afterwards I caused the fresh air to be let in the above mentioned wooden tube to the end of the work, and the vitiated air to return by the gallery and out of the shaft, placing a partition with a door in the main gallery a little out of the shaft, to prevent its exit by the entrance of the mine. The latter plan was more advantageous because the gases had to travel a less distance in the mine than before.

As the excavation in the mine progressed, the number of men required to carry out the material increased, until at last it took nearly every enlisted man in my regiment, which consisted of nearly four hundred effective men. The whole amount of material excavated was 18,000 cubic feet.

The great difficulty was to ascertain the exact distance from the entrance of the mine to the enemy's works, and the course of these works. This was accomplished by making five separate triangulations, which differed but slightly in their result. These triangulations were made in our most advanced line, and within 133 yards of the enemy's line of sharpshooters.

The size of the crater formed by the explosion was at least two hundred feet long, fifty feet wide, and twenty-five feet deep.

I stood on top of our breastworks and witnessed the effect of the explosion on the enemy. It so completely paralyzed them that the breach was practically four or five hundred yards in breadth. The rebels in the forts, both on the right and left of the explosion, left their works, and for over an hour not a shot was fired by their artillery. There was no fire from infantry from the front for at least half an hour; none from the left for twenty minutes, and but few shots from the right. The accompanying drawings which I have made and forward with this report, will explain whatever else has been omitted here.

I have the honor to be, colonel, very respectfully, your obedient servant,

HENRY PLEASANTS,

Lieutenant Colonel.

Testimony of Brigadier General John W. Turner.

WASHINGTON, D. C., January 17, 1865.

Brigadier General JOHN W. TURNER sworn and examined.

By Mr. Loan :

Question. What is your rank and position in the army ?

Answer. I am a brigadier general of volunteers and upon the staff of Major General Butler.

Question. What was your position on the 30th of July last ?

Answer. I was in command of the 2d division of the 10th army corps. My division was detached from the 10th army corps and attached to the command of General Ord, commanding the 18th corps.

Question. What part did you take in the assault made upon the lines before Petersburg on the 30th of July last ?

Answer. On the 29th of July I was ordered to hold myself, with my division, in readiness to participate in the assault that was to be made the next morning in General Burnside's front, with additional instructions from General Ord to report to General Burnside on the afternoon of the 29th for detailed instructions as to the position my division should occupy during the night, and the part I would have to take in the next day's work. I did so, and my instructions from General Burnside were that my division would follow immediately after the 9th corps. It was designed that the 9th corps should assault the enemy's line on the springing of the mine and immediately push for Cemetery hill. My division would follow close after, move off to the right, and cover the movement of the 9th corps on Cemetery hill on its right flank. General Burnside further

told me that in case they did not succeed in gaining Cemetery hill they would undoubtedly hold possession of the enemy's lines, which they would take in the vicinity of the mine, and then I probably would not be brought into the engagement at all.

I went over the ground carefully with a staff officer of General Burnside's staff, visited the gallery leading to the mine and the route over which I was to take my division, especially through the woods, arriving at the point where I was directed to mass my division. I returned to General Burnside and asked him if there were any other troops to pass over that road during the night. Knowing the confusion that was likely to occur in the movement of troops during the night, particularly a dark night, I wanted no mistake to be made, and that I should be in my position at the time the attack was to be made, which was at half past three o'clock, the hour at which the mine was to have been sprung.

Just after nightfall I withdrew my troops from the trenches they were occupying and moved them to a point just in rear of where I was to mass them, where the road led into the woods. I there halted and waited for General Ledlie's division to pass, which was the division that General Burnside informed me would pass over that road, and the only division that was to pass. I was told to wait for it, and that after it had passed there would be nothing in my way to prevent my taking up my position. I arrived at the point where this road led into the woods about twelve o'clock at night, there halted my division and remained waiting for General Ledlie. To make sure, I had despatched a staff officer to General Ledlie's headquarters to ascertain when his division moved, as it was quite dark and it was very difficult to distinguish troops in the night time, more particularly to what division they belonged. I remained there until about half past two o'clock, when General Ledlie's division commenced passing. I remarked that it was pretty late for that division to pass to get into its position to move out at the time designated (at half past three) to make the assault, knowing the difficulties of the road. It passed me, and I immediately moved my division to the point designated, which was at the commencement of the covered way which led to our immediate front, through which all the troops were obliged to pass. It was a narrow covered way. I reported to General Ord about daylight that my troops were in position. He ordered me to wait for further orders.

Some time after five o'clock, between five and half past five, the mine was exploded. I immediately moved my division down this covered way towards the front, the leading regiments of it. Feeling an anxiety to get my men as far forward in support of the assault as possible, I moved them down a hundred yards and there halted. I then mounted a small mound of earth to observe the fighting that was going on. I remained there, I should judge, about half an hour. I then went myself to the front in order to gather all the information I could, so that I might be well informed when I got my orders. I returned, and I should judge it was half past six when I got my first orders to move to the front. My orders from General Ord were, "Follow Potter's division and move out to the right." The last of the troops of Potter's division had just then passed me. I was obliged to take my division down this covered way, where I could have only a two-file front, and in some places only a single file, and followed close on to the rear of General Potter's column. When the head of my column reached the point at which our assaulting column had passed through our lines it was, as near as I recollect, about 7 o'clock.

I jumped up on a parapet to observe what was going on. Immediately in front of me lay the crater, about seventy-five yards distant. The men were in it and around it in great confusion; they were lying down, seeking shelter from the fire of the enemy, which at that time had become exceedingly warm. The enemy had succeeded in getting a cross-fire of artillery and musketry over

the ground lying between our line and the crater. My idea was that the 9th corps would penetrate the enemy's line and double them up to the right and to the left, and then I was to pass out and cover the right flank of the assaulting column; but the enemy still held possession of their lines up to within one hundred yards of the crater when I arrived, which surprised me. It left me no alternative of going out anywhere but directly opposite the crater, where the 9th corps went out. I could see no movement taking place beyond the crater towards Cemetery hill. The troops lay very thick in and around the crater, evidently more than could find cover from the enemy's fire. At that moment I received an order from General Ord again to move out rapidly to the right and cover General Potter on his right flank. It was evident to my mind that General Ord did not understand the topography of the country and the condition of affairs as they were at that moment. It was impossible to move out to the right. The idea was that we would dispossess the enemy of their lines, roll them up to the right, and allow me to go out to the right over any portion of our lines for four hundred yards. That state of affairs did not exist. To have gone out to the right I should have had to mount the parapet exposed to the enemy's fire directly opposite to me, (and they had their lines well manned at that time,) push through our own abattis, cross the morass through the enemy's abattis, and mount his line, which was a line that had been deemed impregnable for two months previous, and the only manner of getting at them was by breaking them, as was done by the crater, and then doubling them up. But the enemy held possession of their line, and to go out right in front of the crater was piling men on top of men already in and around there. I sent back word to General Ord that it was impossible to go out in the manner he had indicated. To make sure, I gave orders to my leading brigade (which was arriving very slowly in consequence of passing through this long, narrow covered way) to mass as it arrived, while I went over and examined the ground in and around the crater. I passed over there, and was confirmed in the judgment which I had held previously from mounting the parapet. The crater was full of men; they were lying all around, and every point that would give cover to a man was occupied. There was no movement towards Cemetery hill; the troops were all in confusion and lying down. I asked one or two officers there if an attempt had been made to move on Cemetery hill. They said the attempt had been made, but it had failed. I then said, "You ought to intrench your position here, and you have too many troops here already to intrench. There are so many troops here that they are in each other's way; they are only exposed to this terrific fire of the enemy," which was then growing warmer and warmer, and was a very severe fire. While I was talking to an officer—we had sought shelter in the crater—the head of the colored division appeared at the crest of the crater, and the division commenced piling over into the crater and passing across it on the other side as well as they could. I exclaimed, "What are these men sent in here for? it is only adding confusion to the confusion which already exists." The men literally came falling right over into this crater on their hands and knees; they were so thick in there that a man could not walk. Seeing that I was going to be covered up there, and be entirely useless, I thought I would go out. As I had no control over these troops, and supposing there were officers in command, I said, "If you can get these troops beyond this line so that I can get out, I will move my division right out and cover your right flank;" and I went back for the purpose of doing so. I met General Ord on our line at the head of my division. I said, "General, unless a movement is made out of the crater towards Cemetery hill, it is murder to send more men in there. That colored division should never have been sent in there; but there is a furor there, and perhaps they may move off sufficiently for me to pass my division out." "Well," said he, "do so if they move." A very few moments after I thought they had started to make a rush towards Cemetery hill, and I

immediately ordered my leading brigade, which was massed by regiments, to charge to the right of the crater. The colored division by that time had nearly, if not quite, all got into the crater; had passed to the right of it perhaps fifty yards, and were all lying down, principally this side of the enemy's line and in it, and were trying to cover themselves the best way they could. My leading brigade charged over our line up to the enemy's works, and took possession of about one hundred yards of it; but there were no movements of the troops in and around the crater to advance on Cemetery hill. At the time my leading brigade charged I directed the head of my second brigade to move out through a break in our works where a creek passed through it, so as to join hands on the right of the first brigade, and charge the enemy's lines beyond. They succeeded in getting only about half way between our lines and the lines of the enemy, when they were stopped by the enemy's fire. The first brigade, as I said, succeeded in reaching the enemy's works, and took possession of about one hundred yards of it, when they laid down. I immediately sent word to my first brigade commander, who was within hailing distance—within sight, probably seventy-five yards off—to take his leading regiment and charge by the right flank, so as to sweep down the enemy's lines, while I brought up the second brigade. I was in hopes to take possession of a still greater length of the enemy's line. I returned to the brigade commander of my third brigade, and ordered him to mass his troops behind our lines, and hold them in readiness for any exigency. I had but just given him his instructions when my first brigade charged by the right flank, in obedience to my orders. I immediately passed over the line to the second brigade to give the command "Forward!" I had got, probably, half way between our line and the enemy's lines—which were perhaps only a hundred yards apart at that point, and it was a very broken country, thick underbrush and morass—when, looking to the left, I saw the troops in vast numbers coming rushing back, and immediately my whole first brigade came back, and then my second brigade on my right, and everything was swept back in and around the crater, and probably all but about one-third of the original number stampeded back right into our lines. After some exertion I rallied my men of the first and second brigades after they got into our lines, while my third brigade held the line. After rallying them I placed them in position in the line, and remained there until probably the middle of the afternoon, when I received orders to retire. I would state, further, that the peculiar topography of the ground had a great influence in determining the result. It was impossible to assault in mass; columns had to come up only two file front.

Question. Why was there any necessity for your coming up that covered way within our line, after the ninth corps had charged?

Answer. The fire of the enemy had not been reduced, and it swept all the ground from the position where our division was massed up to the front of our line.

Question. What was the distance?

Answer. I suppose that distance was four hundred yards. When I was down there the day before, I did not intend to pass through that covered way, knowing the great delay it would cause in trying to get troops through there. My idea was, and it was the idea conveyed at General Burnside's headquarters, that the ninth corps breaking the enemy's line would double it up to the right, and then I expected to move my division right over hill and vale—it was very rough. But by the time I got orders to move my division, the enemy's fire covered the ground.

Question. And you were compelled to use the covered way because of the enemy's fire?

Answer. Yes sir; it was so heavy that the troops could not come up otherwise without great loss.

Question. You spoke about your first brigade passing to the enemy's line; did they pass through the crater?

Answer. No, sir; to the right of the crater.

Question. Did they pass through the enemy's line, and charge his parapet?

Answer. Yes, sir.

Question. While you were in the crater or at any other time, did you see any of the division commanders of the ninth corps in the crater, or immediately with their troops?

Answer. I did not. I did not know General Potter, but I recognized no division commander of the ninth corps there. When I was in the crater I tried to find a division commander, for I had supposed I would find one in there, and I wanted to impress upon him my idea of the necessity of moving forward, because then was the time to determine what to do. It was one of two things; if we failed to move towards Cemetery hill, there was but one other thing to do, to intrench ourselves in the position we had gained, and we should have turned our attention to it. There was already twice the number of troops in and around the crater necessary to intrench themselves. They were in each other's way; and it was necessary also to open a communication between the crater and our own line. I went over there to see the ground, and to see a general officer and converse with him on that point, as I had no command or control over any of the ninth corps.

APPENDIX.

WAR DEPARTMENT,
Washington City, February 8, 1865.

SIR: In compliance with your request I transmit herewith a copy of the testimony before the court of inquiry, of which Major General W. S. Hancock was president, in relation to the explosion of a mine and attack upon the enemy's lines before Petersburg, Virginia, on the 30th of July, 1864.

I am, sir, very respectfully, your obedient servant,
EDWIN M. STANTON, *Secretary of War.*

Hon. B. F. WADE,
U. S. Senate, Chairman Committee on Conduct of War.

RECORD OF THE COURT OF INQUIRY INSTITUTED BY SPECIAL ORDER No 258, 1864, W. D.

NOTE.—The erasures and interlineations in this record were almost unavoidable under the circumstances, but they were not regarded sufficiently objectionable to warrant the delay which would have attended the preparation of a fairer copy. The corrections were all made with the knowledge of the court.

EDWARD SCHRIVER,
Inspector General, Judge Advocate.

Record of the proceedings of court of inquiry instituted by virtue of the following orders:

SPECIAL ORDERS } WAR DEPARTMENT,
No. 258. } *Adj't General's Office, Washington, D. C., Aug. 3, 1864.*

[Extract—Paragraph 43.]

By direction of the President a court of inquiry will convene in front of Petersburg at ten o'clock a. m. on the fifth instant, or as soon thereafter as practicable, to examine into and report upon the facts and circumstances attending the unsuccessful assault on the enemy's position on the 30th of July, 1864.

The court will report their opinion whether any officer or officers are answerable for the want of success of said assault; and if so, the name or names of such officer or officers.

Detail for the court.

Major General W. S. Hancock, Brigadier General R. B. Ayres, Brigadier General N. A. Miles; and Colonel E. Schriver, inspector general, judge advocate, United States volunteers.

By order of the Secretary of War:

E. D. TOWNSEND, *Ass't. Adj't. Gen.*

FIRST DAY.

COURT ROOM, HEADQUARTERS SECOND CORPS,
August 6, 1864.

The court met pursuant to the foregoing orders.

Present: Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

The order instituting the court was read, and the court and the judge advocate were sworn according to law.

The judge advocate then presented and read the orders issued from the headquarters of the army of the Potomac on the 29th of July, 1864, containing the

"instructions for the guidance of all concerned" in the operations against the enemy's position before Petersburg, on the 30th of July, as follows:

HEADQUARTERS ARMY OF THE POTOMAC,

July 29, 1864.

Orders.—The following instructions are issued for the guidance of all concerned:

1. As soon as it is dark Major General Burnside, commanding 9th corps, will withdraw his two brigades under General White, occupying the intrenchments between the plank and Norfolk roads, and bring them to his front. Care will be taken not to interfere with the troops of the 18th corps moving into their position in rear of the 9th corps.

General Burnside will form his troops for assaulting the enemy's works at daylight of the 30th; prepare his parapets and abattis for the passage of the columns, and have the pioneers equipped for work in opening passages for artillery, destroying enemy's abattis, &c., and the intrenching tools distributed for effecting lodgement, &c.

2. Major General Warren, commanding 5th corps, will reduce the number of his troops holding the intrenchments of his front to the minimum, and concentrate all his available force on his right, and hold them prepared to support the assault of Major General Burnside. The preparations in respect to pioneers, intrenching tools, &c., enjoined upon the 9th corps, will also be made by the 5th corps.

3. As soon as it is dark, Major General Ord, commanding 18th corps, will relieve his troops in the trenches by General Mott's division of the 2d corps, and form his corps in rear of the 9th corps, and be prepared to support the assault of Major General Burnside.

4. Every preparation will be made for moving forward the field artillery of each corps.

5. At dark Major General Hancock, commanding 2d corps, will move from Deep Bottom to the rear of the intrenchments now held by the 18th corps, resume the command of Mott's division, and be prepared at daylight to follow up the assaulting and supporting column, or for such other operations as may be found necessary.

6. Major General Sheridan, commanding cavalry corps, will proceed at dark from the vicinity of Deep Bottom to Lee's mill, and at daylight will move with his whole corps, including Wilson's division, against the enemy's troops defending Petersburg on their right, by the roads leading from the southward and westward.

7. Major Duane, acting chief engineer, will have the pontoon trains parked at convenient points in the rear, prepared to move. He will see that supplies of sand-bags, gabions, fascines, &c., are in depot near the lines ready for use. He will detail engineer officers for each corps.

8. At half past three in the morning of the 30th Major General Burnside will spring his mine, and his assaulting columns will immediately move rapidly upon the breach, seize the crest in the rear, and effect a lodgement there. He will be followed by Major General Ord, who will support him on the right, directing his movement to the crest indicated, and by Major General Warren, who will support him on the left. Upon the explosion of the mine the artillery of all kinds in battery will open upon those points of the enemy's works whose fire covers the ground over which our columns must move, care being taken to avoid impeding the progress of our troops. Special instructions respecting the direction of fire will be issued through the chief of artillery.

9. Corps commanders will report to the commanding general when their preparations are complete, and will advise him of every step in the progress of the operation, and of everything important that occurs.

10. Promptitude, rapidity of execution, and cordial co-operation are essential

to success, and the commanding general is confident that this indication of his expectations will insure the hearty efforts of the commanders and troops.

11. Headquarters during the operation will be at the headquarters of the 9th corps.

By command of Major General Meade:

S. WILLIAMS,
Assistant Adjutant General.

Whereupon the court directed the judge advocate to notify all the officers named therein of the institution and design of the court, so as to enable them to be present during its sessions, which was done by addressing the following circular to each:

COURT ROOM, HEADQUARTERS SECOND CORPS,
August 6, 1864.

SIR: The court of inquiry instituted by the War Department, Special Orders No. 258, of August 3, 1864, for the investigation of the facts and circumstances which attended the unsuccessful assault on the enemy's lines before Petersburg on the 30th ultimo, will meet here on the 8th instant and the days following at ten o'clock a. m., and I am directed to acquaint you thereof, so that you may be present at the court's session should you desire to do so. Please acknowledge the receipt of this communication to me at the headquarters of the army of the Potomac.

Very respectfully, sir, your obedient servant,

EDWARD SCHRIVER,
Inspector General, Judge Advocate.

Addressed to Major Generals Meade, Burnside, Warren, Sheridan, and Ord, and Brigadier Generals White, Hunt, and Mott, and Major Duane.

The court then adjourned, to meet at ten o'clock a. m. on the 8th instant.

SECOND DAY.

COURT ROOM, HEADQUARTERS SECOND CORPS,
10 o'clock a. m., August 8.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

The proceedings of the first day were read and approved.

The judge advocate stated that he had engaged Mr. Finley Anderson, a phonographer, to record the proceedings so long as he should do so to the court's satisfaction, and Mr. Anderson was sworn according to law.

It is here recorded, also, that all officers of rank who, it is supposed, participated in the affair of the 30th ultimo have been informed that they could be present at the court's sessions, and make any statements they may regard important to themselves should they see fit.

Major General G. G. MEADE, United States volunteers, being duly sworn, says:

I propose in the statement that I shall make to the court—I presume the court want me to make a statement of facts in connexion with this case—to give a slight preliminary history of certain events and operations which culminated in the assault on July 30th, and which, in my judgment, are necessary to show to this court that I had a full appreciation of the difficulties that were to be encountered, and that I had endeavored, so far as my capacity and judgment would enable me, not only to anticipate, but to take measures to overcome those difficulties.

The mine constructed in front of General Burnside was commenced by that

officer soon after the occupation of our present lines, upon the intercession of Lieutenant Colonel Pleasants, I think, of a Pennsylvanian regiment, without any reference to, or any sanction obtained from, the general headquarters of the army of the Potomac. When the subject was brought to my knowledge, I authorized the continuance of the operations, sanctioned them, and trusted that the work would at some time result in forming an important part in our operations. But from the first I never considered that the location of General Burnside's mine was a proper one, because, from what I could ascertain, the position of the enemy's works and lines erected at that time, the position against which he operated, was not a suitable one in which to assault the enemy's lines, as it was commanded on both flanks, and taken in reverse by their position on the Jerusalem plank road, and their works opposite the Hare House.

I will now read to the court the despatches which passed between Lieutenant General Grant, commanding the armies of the United States and myself, which will bear in themselves a sort of history of those preliminary operations, a correspondence which resulted, as I said before, in the final arrangements for the assault on July 30th.

On the 24th July I received a letter from the lieutenant general commanding, which I will now read. I had been previously informed by the lieutenant general commanding that he desired some operations to take place offensive, against the enemy, and he had instructed the engineer officer at his headquarters, the engineer officer at General Butler's headquarters, and the engineer officer at the headquarters of the army of Potomac, to make an examination of the enemy's position, and give an opinion as to the probable result of an attack. Their opinion is contained in the following letter:—(See document, marked A, appendix.)

I desire to call the particular attention of the court to that communication, because it contains the views of the lieutenant general commanding with reference to the assault which should be made on Petersburg, and I wish them to compare this communication with the orders and arrangements that I gave and made, so that they may see that, to the best of my ability, I ordered everything which he indicated to be done.

At the time that this communication was made to me, however, I was under the impression that the obstacles to be overcome were more formidable than the subsequent operations led me to believe, and also that subsequent to that time there had been no movement of the army to produce that great weakening of the enemy's front which afterwards occurred. Therefore my reply was to the effect that I was opposed to our making the assault.

The following is my reply, sent on the 24th.—(See documents B and B 2.)

In reply to that I received a communication or report from General Grant, the result of which was a suspension of the proposed attack.—(Document C.)

Next day I made a closer examination; and in the mean time a signal station was erected in a pine tree in front of General Burnside, which gave us a more complete view than we had previously had of the enemy's line. My observations modified my views, because I could not detect a second line, although I detected isolated batteries on the crest. I therefore wrote the following communication to General Grant, dated 12 m., July 26.—(Document D.)

To which I received the following reply.—(Document E.)

There you perceive that the lieutenant general commanding ordered that whilst the 2d corps was across the James river I should immediately make an assault with the 9th and 5th, abandoning the line of the 5th corps. In answer to that I wrote him the following despatch.—(Document F.)

That produced a suspension of the order to attack until the return of General Hancock.

The next despatch I received from General Grant was the following.—(Document G.)

Which I answered at 1 p. m., July 28th, as follows.—(Document H.)

I will here observe that Lieutenant General Grant, in consequence of the services which the 2d corps had performed across the river, desired, and gave me directions verbally to that effect, to use the 18th corps in the assault, and to let the 2d corps take the place of the 18th in the line.

The next despatch I received was the following, dated City Point, July 29.—(Document I.)

General Grant had come to my headquarters at 4 p. m., and at that time I showed him the order for the assault next day, which had just then been prepared, and which order met with his perfect approbation: he read the order and expressed his satisfaction with it. No other despatches passed between the lieutenant general and myself.

Next morning between half past three and four o'clock—before four o'clock, he arrived on the ground, at General Burnside's headquarters, and all further communications between us were verbal, until August 1st at 11.40 a. m., when I received the following despatch.—(Document J.)

We had given our respective views concerning the assault, and I particularly impressed my views with reference to the difficulties to be overcome. When it was ascertained that the movement of the 2d corps had drawn over to the north bank of the James five of the eight divisions composing General Lee's army, together with the information I had obtained that the enemy had no second line upon the ridge, but only one or two isolated batteries, I came to the conclusion that the explosion of the mine, and the subsequent assault on the crest I had every reason to believe would be successful, and would be followed by results which would have consisted in the capture of the whole of the enemy's artillery, and a greater part of his infantry.

The plan sketched out by Lieutenant General Grant in his despatch to me, which I endeavored to carry out, and for the execution of which I gave the necessary orders, was, that the mine should be exploded as early as possible in the morning, before daylight; that in the mean time the 9th corps should be massed and formed in assaulting columns; that every preparation should be made by removing the abatis so that the troops could debouch, and particularly the assaulting columns; that as soon as the mine was exploded, the assaulting columns should push forward; that a sufficient proportion should be left to guard the flanks of the main column, because they had to look for an attack on the flanks; that the main body should hold the lines during the attempt to gain the crest of the hill, and if it was successful, then I intended to throw up the whole of the 18th corps to be followed by the 2d corps, and if necessary by the 5th corps also. I do not suppose it is necessary to read the order. I will read it, however.—(Document K.)

Having read to the court the correspondence which passed between the lieutenant general and myself preliminary to the operations, and having read the order for the operations, I now propose to read and to accompany with some explanatory remarks the despatches and correspondence which passed between myself and Major General Burnside, who had the immediate active operations to perform; afterwards between myself and Major General Ord, between myself and Major General Warren, and between myself and Major General Hancock. These despatches, when compared with each other, and in connexion with the remarks which I shall make, will show the facts so far as they came to my knowledge; and I wish the court to bear in mind, and I desire to call their attention particularly to the paucity of information which was furnished me by Major General Burnside of the operations which were made, and to the difficulty that a major general commanding an army like the one I am commanding labors under to give direct orders in the ignorance of matters transpiring in the front at the immediate scene of operations.

Before those operations were concluded upon I called on Major General Burn-

side to furnish me in writing what he proposed to do in case his mine was exploded. In response to which I received the following report.—(Document L.)

The request made in that communication by Major General Burnside was complied with; that is to say, sand-bags were furnished him; but the amount of powder asked for, which was twelve thousand pounds, was reduced to eight thousand upon the belief on my part, and on my engineers, that eight thousand pounds would be sufficient for the purpose.

Another matter in that despatch to which my attention was directed, and which was finally the subject of an order on my part, is the suggestion of Major General Burnside to place the colored troops at the head of the assaulting column. That I disapproved, and I informed him of my disapproval, which was based upon the ground, not that I had any reason to doubt, or any desire to doubt the good qualities of the colored troops, but that I desired to impress upon Major General Burnside, which I did do in conversations, of which I have plenty of witnesses to evidence, and in every way I could, that this operation was to be a coup-de-main, that his assaulting column was to be as a forlorn hope, such as are put into breaches, and that he should assault with his best troops; not that I had any intention to insinuate that the colored troops were inferior to his best troops, but that I understood that they had never been under fire, nor that they should not be taken for such a critical operation as this, but that he should take such troops as from previous service could be depended upon as being perfectly reliable. Finding General Burnside very much disappointed—for he had made known to General Ferrero and his troops that they were to lead in the assault—and fearing that the effect might be injurious, and in order to show him that I was not governed by any motive other than such as I ought to be governed by, I told him I would submit the matter, with his reasons and my objections, to the lieutenant general commanding the armies, and I would abide by the decision of the lieutenant general, as to whether it was expedient and right for the colored troops to lead the assault. Upon referring the question to the lieutenant general commanding, he fully concurred in my views, and I accordingly addressed to Major General Burnside, or had addressed to him, the following communication.—(Document M.)

[The following despatches read near the end of the testimony are here inserted, as directed, in their proper places.]—(Documents M 1, and M 2.)

The next despatch to Major General Burnside was addressed by me at 9.45 p. m., July 29, the evening before the action. I had received a despatch from General Ord, stating that it would take him till very late to relieve the troops in the trenches.

The following is my despatch to General Burnside.—(Document N.)

My idea was that General Burnside should form his columns of assault, make all his preparations, take all his men out of the trenches, and move forward; and that then General Ord should occupy his trenches in case he should find it necessary to return. No further despatches passed between General Burnside and myself. I think it proper to state, however, that on the day previous to the assault I was at General Burnside's headquarters, and had the good fortune to meet his three division commanders, and some conversation passed between us, and I would like the court to inquire into what transpired on that occasion, because I would like to impress upon the court, as I did impress upon General Burnside and his officers, that this operation which we had to perform was one purely of time; that if immediate advantage was not taken of the explosion of the mine, and the consequent confusion of the enemy, and the crest immediately gained, it would be impossible to remain there, for that as soon as the enemy should recover from their confusion, they would bring their troops and batteries to bear upon us and we would be driven out. That there were two things to be done, namely, that we should go up promptly and take the crest; for, in my judgment, the mere occupation of the crater and the holding on to that was of

no possible use to us, because the enemy's line was not such a line as would be of advantage to us to hold, except to go from it to the crest, and that the troops were to be withdrawn when the assault proved unsuccessful.

General HANCOCK, *President*. Do you not mean that you met four division commanders, instead of three as you said, at the headquarters of General Burnside?

General MEADR. No; I mean three. I saw Potter, Ledlie, and Wilcox, and I mentioned in the presence of those gentlemen the tactical manœuvres to be made between that crater and the crest—that the only thing to be done was to rush for the crest and take it immediately after the explosion had taken place; and that they might rest assured that any attempt to take time to form their troops would result in a repulse.

Those were all the despatches that transpired between General Burnside and myself before the day of the assault.

On the morning of the 30th, about aqu arter past three o'clock, when I was about preparing to go forward to General Burnside's headquarters, I found that it was very dark, and suggestions being made by some of my officers that it was too dark to operate successfully, and that a postponement of the explosion of the mine might be advantageous, I accordingly addressed a despatch to General Burnside to the following effect.—(Document O.)

To that I received the following reply from General Burnside.—(Document P.)

I then went over to General Burnside's headquarters, he, during these operations, being further to the front. The hour had arrived. I stood waiting. I heard no report from General Burnside and no explosion of the mine. In the mean time Lieutenant General Grant arrived. Finding that there was no explosion, I sent two staff officers, first Captain Jay, and then ———, I do not recollect the name of the other; but I sent two staff officers to ascertain from General Burnside what the difficulty was, if there was any difficulty; why his mine did not explode, if he knew; to which I received no answer. At 4.10 the following despatch was sent to him.—(Document Q.)

And to this I got no answer.

At 4.20 another despatch was sent to him, as follows.—(Document R.)

I should have stated before this, that in order to secure the speedy transmission of intelligence, I took the precaution to have a telegraph run from my headquarters, in General Burnside's camp, to where General Burnside had established his headquarters for the day, in the 14-gun battery.

The following is the next despatch I sent to General Burnside.—(Document S.)

To this I received no reply. Finding that no replies were received, and the lieutenant general commanding desiring that an immediate assault should be made without reference to the mine, at 4.35 the following despatch was sent to General Burnside.—(Document T.)

The same orders you will find were sent to General Warren, to General Mott, and to General Hunt, to open the artillery. About this time, however, about 4.40, the mine was exploded. In the mean time Captain Jay returned, and informed me that the fuse had failed, that a defect was found, and the fuse had been overhauled, about fifty feet or twenty-five feet, I forget the distance, from the entrance, that the defect had been ascertained, and had been remedied, and that finally the mine had been exploded. So far as my recollection goes the mine was exploded about 4.40 or 4.45. At 5.45 a. m., one hour after the explosion of the mine, the following despatch was sent to General Burnside.—(Document U.)

The following despatch was received from him, apparently as an answer to mine, although, through a difference in time, it is dated before it.—(Document V.)

About this time, 5.45 or 5.50, (I see by reference to the despatch that it is 5.45,) an orderly came up to me, and delivered me a despatch which, upon

opening, I found to be a despatch from Colonel Loring, inspector general of the 9th corps, written at the crater, and addressed to General Burnside, which despatch the orderly, not knowing where to find General Burnside, had brought to his old headquarters, where it found me. That despatch, so far as I recollect the purport of it, was to the effect that General Ledlie's troops occupied the crater, but in his (Colonel Loring's) opinion, he feared the men could not be induced to advance beyond. That despatch was telegraphed to General Burnside, and sent to him by an officer, so that I have no copy of it. That was the substance of it, however. It was shown to General Grant and General Humphreys, both of whom can give their recollection of it in confirmation of mine. It is an important matter to be taken into consideration here, that as early as 5.45 a. m. a despatch was placed in my hands stating that General Ledlie's troops could not be induced to advance.

In addition to that, the following despatch was sent to him.—(Document W.)

Fearing that there might be some difficulty on the part of General Burnside's troops, I thought it possible that by another corps going in on his right, encouragement might be given to his men, and a prompt assault might be made.

The next despatch I received was from an aide-de-camp, whom I had sent to General Burnside's headquarters to advise me of what was going on. It is dated 5.50, and is from Captain Sanders.—(Document X.)

The next despatch that I will read is one addressed to General Burnside, at 6 a. m.—(Document Y.)

Despatches were at this time also sent to Generals Ord and Warren. You can keep these dates in your mind.

The next despatch was received from Captain Sanders, at 6.10 a. m., as follows.—(Document Z.)

The following despatches are next in order.—(Documents 1, 2, and 3.)

At seven a. m. Lieutenant General Grant put into my hand a despatch from Colonel Comstock, an officer whom he had sent to see the progress of operations.—(Document 4.)

I read all these despatches in order that you may see how I was situated on the occasion, and what I knew of what was going on.

At 7.20, twenty minutes afterwards, I got the following despatch from General Burnside.—(Document 5.)

Upon the receipt of this despatch from General Burnside, informing me that it was hard work to take the crest, at the same time he not having reported to me that anybody had attempted to take it, or that any part of his force had made any effort to take it; with the despatches from my officers, the despatch from Colonel Loring, and the despatch from Colonel Comstock, to the effect that the troops were lying there, I came to the conclusion that possibly there might be some difficulty in getting the men to move forward, either from the enemy's fire, or some imaginary obstacle the troops had to encounter; that, as it was now 7 o'clock, and that the place had been occupied at 5.30, I began to suppose that there was some reason for the delay which had not been officially reported. I considered it natural that General Burnside would be indisposed to make it known, so long as he had hopes of overcoming the difficulty. To me, in my position as major general commanding the army, it was a matter of the utmost importance, because it was my intention during the assault, and before it, that if we could not carry the crest promptly by a coup-de-main, to withdraw the troops as quickly and safely as possible. Impressed with this view, and in order to get at the exact condition of affairs, and to justify General Burnside, if there was any reason of that kind, I addressed him the following despatch.—(Document 6.)

It is proper to say, that immediately after sending that despatch, and before receiving General Burnside's answer, I received a report verbally from Captain

Sanders, that an attempt had been made to make an attack on the right, I think by General Griffin, and that he had been repulsed. I immediately sent another despatch to General Burnside at 8 a. m., as follows.—(Document 7.)

To the first of these two despatches, subsequent to sending the second, I received this reply.—(Document 8.)

The next despatch that I received was one from Colonel Comstock, about the same time, 8 a. m.—(Document 9.)

The next despatch I received was one dated 8.45 a. m., from Captain Sanders.—(Document 10.)

At 9 a. m. I received the following despatch from General Burnside.—(Document 11.)

That was the first information I had received that there was any collision with the enemy, or that there was any enemy present. At 9.30 a. m. the following despatch was sent to General Burnside.—(Document 12.)

Then I received the following despatch from Captain Sanders.—(Document 13.)

The next despatch was this, from Colonel Comstock.—(Document 14.)

The next despatch to General Burnside, at 9.45, was the peremptory order to withdraw.—(Document 15.)

Receiving information from some person—I don't know who it was—that there was some difficulty about withdrawing at that time, that the safety of the column might be jeopardized by undertaking to withdraw it, the following despatch was sent to General Burnside, and also to General Ord, who had troops there at that time. None of my despatches to General Ord have been presented yet, because it would have confused matters. I will read them hereafter.—(Document 16.)

About that time, both Major General Burnside and Major General Ord came to the headquarters where General Grant and myself were temporarily located. General Burnside seemed to be very much displeased at the order of withdrawal, and expressed the opinion that if allowed to remain there, by nightfall he could carry that crest. As, however, he did not give any reason to show how he could take it, and as he had been from half past five in the morning till nearly ten, and not only had not taken it, but had his men driven out of the works he had been occupying, and as Major General Ord, whose troops were also there, upon being asked if the crest could be carried, answered very positively that it was entirely out of the question, it was determined by the lieutenant general commanding and myself, or rather, as I referred the matter to him, and he desired the orders changed, it was determined that no further attempt should be made to take the crest, but that the men should be withdrawn whenever that could be done with security.

There is now a very important point to which I will call the attention of the court, and which I want investigated very thoroughly, and that is the withdrawal from the crater.

At the time the order was given to withdraw the troops, the report of Major General Ord was, that the crater of the mine was so overcrowded with men that it would be nothing but murder to send any more men forward there. I do not recollect as to whether the report of Major General Burnside was so definite, but I believe the report of Colonel Loring was that there was at least one division of the troops in there. The impression left upon my mind was that at that time there were as many men in the crater as would enable them to defend themselves if attacked, and in case no defence was necessary and there was no occasion on my part to order troops to be sent there, I presumed that Major General Ord and Major General Burnside, who were having charge of that operation, would see that the men would be properly withdrawn.

This conclusion having been arrived at by the lieutenant general and myself, and it not appearing necessary that we should remain any longer at Major
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General Burnside's headquarters, the lieutenant general commanding withdrew to City Point and I withdrew to my former headquarters, where I was in telegraphic communication with Major General Burnside, and where, under the common correspondence between a general officer commanding the army and his subordinates, not to say under a peculiar exigency, I expected to be informed of anything that should occur. I remained in total ignorance of any further transactions until about six or seven o'clock in the evening. About that hour a report, or a rumor, reached me that there were a number of our wounded men lying between the crater and our line, and I think an appeal was made to me by General Ord if something could not be done to remove those men. I was not aware that there was any difficulty in the way of removing them, and wondered why they had not been removed, presuming that our men were in the crater, and as no report had been made to me that they had been withdrawn, I directed a despatch to be sent to Major General Burnside, calling upon him for information. That despatch read as follows.—(Document 17.)

You will remember that I left General Burnside's headquarters about 10 o'clock, with the understanding that the troops were to be withdrawn when they could be withdrawn with security.

[The following despatches were subsequently read by the witness:—(Documents 18, 18½, 18½, 18½, 19, 19½, 20.)

So far as any information from General Burnside is concerned, I had to go to bed that night without knowing whether his troops were in the crater, or whether they were not. During the night despatches were received, referring to the relief of General Ord's troops next morning, July 31, at 8.40 and 9 a. m. The despatches 18½ and 18½ were sent and received by General Humphreys. No despatch was received from General Burnside with reference to the withdrawal of these troops till 6.40 p. m., July 31, (marked 18½) to which was sent the one marked 19. At 9.10 p. m., July 31, the despatch was received from General Burnside marked 19½, and the reply marked 20 was sent. Now, I beg leave to call the attention of the court to the fact that this despatch is dated 9.10 p. m., July 31, and although it does not give an official statement of the time of the withdrawal of the troops, I know, but only from other information, that the withdrawal was at about 2 p. m., July 30. And as I consider that my conduct is here the subject of investigation as much as that of any other officer or man engaged in this enterprise, I wish to repudiate, distinctly, any responsibility resting upon me for the manner of the withdrawal, beyond the orders I gave to the effect that the troops were to be withdrawn when they could be withdrawn with security; and if they had been able to repulse an attack of the enemy, it seems to me rather extraordinary that when another attack was threatened after the success, that they should be withdrawn simply because they were threatened with another attack. But that is the point to which I wish to call the attention of the court, and which I wish to have thoroughly investigated.

I believe those constitute the sum and substance of all the orders that passed between myself and Major General Burnside. But I respectfully submit to this court that, so far as it was in my power as the commanding general of this army to give orders, I anticipated the difficulties that occurred, and endeavored to avoid them as much as I could do so, and that I cannot be held responsible for the failure which afterwards resulted.

Having finished my correspondence with and orders to General Burnside, I now propose to read the correspondence with and orders to General Ord, who was the officer commanding the force next to be employed after those of General Burnside, and whose movements it is important to know.

Major General Ord was directed to relieve his corps by General Mott's division of the 2d corps on the evening of the 29th. He was then to move and mass his troops in rear of the 9th corps, and it was intended that he should

support the 9th corps whenever the 9th corps had effected a lodgement on the crest; that he was promptly to move up to them and support them on the crest. I had several interviews with General Ord on the 28th and 29th. I went with him and showed him the position; showed him exactly the ground; gave him all the information I had, and also caused him to send staff officers to select positions for the troops, so that when it became dark they might know the roads. On the morning of July 30, when it became evident to my mind that General Burnside's troops were not going to advance further than the crater, and when I had reason to suppose it was owing to some difficulty on the part of the troops themselves, and, so far as any official report came to me, rather than obstacles presented by the enemy, I sent a despatch to General Ord, changing his previous orders and directing him instead of supporting General Burnside to make an assault independent of General Burnside. That despatch and subsequent despatches are as follows.—(Documents 21, 22, 23, 23½, 23½, 24.)

There were some other despatches to General Ord of a similar character, (but I do not see them here,) to endeavor to get him forward independent of the ninth corps, to make an isolated attack, an attack of his own, independent of the ninth corps. Owing to the obstacles presented—the fact that there was no proper *debouche* for our troops to that portion of the enemy's line, and the fact that the crater was overcrowded with men—General Ord, considering those obstacles insurmountable, confined his operations to sending forward, I think, only one brigade. But General Ord and his division commanders have made reports, which will be placed before you. I forgot to bring them with me to-day.

At about 9.45 a. m. the same orders were sent to General Ord as to General Burnside, with reference to the withdrawal of the troops. That finishes all that passed between General Ord and myself.

The other supporting column was under Major General Warren on the left.

In the original order General Warren was directed to mass his available troops on the right of the line, and to make all his preparations to support General Burnside in the assault wherever he should be ordered.

At 4.40 a. m. the following despatch was sent to him.—(Document 25.)

At 5.50, one hour afterwards, and immediately after my receiving the information that General Burnside's corps occupied the crater, the following despatch was sent to him.—(Document 26.)

I wish to call the attention of the court to the fact that as early as 5.50 I authorized General Warren, if he saw any opportunity of doing anything with his corps, not only in support of General Burnside but as an independent operation of his own, that he should take advantage of it and push forward his troops. His reply, dated 6 a. m., is as follows.—(Document 27.)

At 6.15 a. m., another despatch was received from him as follows.—(Document 28.)

Then at 6.20 another despatch (No. 29) came from General Warren, in which he states that what we thought was a heavy line of the enemy behind the line occupied by Burnside's troops, as the sunlight comes out and the smoke clears away, proves to be our own troops in the enemy's position.

You will perceive that at 5.40 I authorized General Warren and directed him to make an attack without waiting for the support of General Burnside, that is, if circumstances would justify his making an attack; and that his replies here indicate that no such attack was practicable. Coming to that conclusion and receiving information from the signal officers that the enemy had left their extreme right, which I presumed they would do, to mass on the centre to receive our attack, the following despatch was sent to General Warren at half past six o'clock.—(Document 30.)

General BURNSIDE asked for the reading of the despatch to General Wilson, commanding a cavalry division.

General MEADE replied that he did not have the despatch with him now, but

would procure it for him. The order to General Wilson was written, he said, about the same time as the above despatch to General Warren—about half past six a. m.

General BURNSIDE wished to be informed whether or not the order to General Wilson was rescinded.

General MEADE replied that the order to the cavalry was rescinded when the infantry was ordered to withdraw.

General MEADE then resumed the reading of despatches, presenting Documents 31 and 32.

General BURNSIDE. I would like to know what that despatch to the cavalry was, and exactly what time it was rescinded.

General HANCOCK. If you will recollect the matter, we will have it called for subsequently.

General MEADE. Just make a memorandum of it, and I will have it sent. Indeed, I am not positive, but I think my despatches to General Sheridan, of the cavalry, are here. If they are, they will be read.

The next despatch in order is the following, dated 7.30 a. m., to General Warren.—(Document 33.)

General Ayres still remained on the right, and the orders still existed to do anything with him that could be done to advantage. At 7.50 a. m. we have the next despatch from General Warren.—(Document 34.)

Nothing further was received while we awaited developments from General Crawford until 8 a. m., when the following despatch was received from General Warren.—(Document 35.)

Notwithstanding it was considered that General Warren's original order authorized him to take the batteries if it could be done, inasmuch as he was directed to move and attack with General Crawford, and as it was suggested that General Ayres might be required, it was thought proper to send him the following order at 8½ a. m.—(Document 36.)

At 9.15 a. m. the following despatch was received from General Warren.—(Document 37.)

At this time the conclusion had been arrived at by the lieutenant general commanding and myself that the affair was over, and that nothing more could be done; and soon afterwards, orders similar to those which were sent to others were sent to General Warren, that he should not make any attempt to take the two-gun-battery. The following despatches were sent to General Warren.—(Documents 38, 38½, 39 and 40.)

These are all the orders and communications that passed between General Warren and myself. He was authorized to attack, if he could see a good chance to attack. When he reported no chance to attack, and was asked what force he had available, he reported that he had no force available except he moved Ayres; he was directed not to move Ayres until information was received from Crawford; only, if he could attack the two-gun battery in his front, he was ordered to attack it, and then the operations were subsequently suspended.

Now I have read you the communications that passed between myself and General Grant, myself and General Burnside, myself and General Ord, and myself and General Warren. It now remains for me to read the communications that passed between myself and General Hancock, and myself and General Mott.

The first was a communication sent at 4.40 a. m. to General Mott.—(Document 41.)

At 4.50 a. m. the following despatch was sent to the telegraph operator at the headquarters of the 18th corps.—(Document 42.)

The following despatch, dated July 30, 6 a. m., was sent to General Hancock after the mine was occupied.—(Document 43.)

The following despatches were sent and received.—(Documents 44, 45, 45½, 45½, 46, 47, 48, 49, 50, 51, and 52.)

These include the despatches sent to the cavalry. I would explain that the separate orders to General Wilson were issued because General Sheridan, commanding the cavalry corps, was across the James river, at Deep Bottom, with two divisions, and I had to issue separate orders to General Wilson, so that he might be ready for the movement next day.

Here are some despatches which are of no particular consequence, but I will leave them here. They are despatches from the signal officers, indicating the movements of the enemy :

General BURNSIDE. I would suggest that all the despatches should be left.

General HANCOCK. General Meade is now giving his direct testimony, and only such despatches are numbered as he wishes to incorporate. The others will be left here and can be called for at any time.

General MEADE. Well, I will read these despatches, and you can number them and put them down.—(Documents 54, 55, 56, 57, and 58.)

It was on those reports of the signal officers that General Warren's orders were predicated.

The following is the report of the chief of engineer.—(Document 59.)

I believe I have now read every despatch that I have received, and the court are fully aware of all the information that I received on the ground.

General BURNSIDE said that before the court adjourned he would like to ask what latitude was allowed in the investigation.

General HANCOCK explained that the court had gone back to the orders from General Meade, the orders from General Grant, and to the first inception of the mine.

General MEADE. I would state that in the general orders issued on the night previous to the assault, the cavalry was ordered to make this attack on the left. Two divisions of the cavalry corps were over at Deep Bottom. They could not cross the river until after the second corps had crossed, so that it was late in the day before they came up. Indeed, the head of the column did not appear before the offensive operations were suspended.

As General Wilson had been ordered to be in readiness, however, and in view of the unavoidable delay of Sheridan, orders were sent to General Wilson not to wait for General Sheridan, but to push on himself to the Weldon railroad and make an assault upon the enemy.

No report was received from General Sheridan. General Sheridan was sick. General Gregg reported in the evening that he had advanced his cavalry, and that they found the enemy in force at Reams's station, at Gurley's house, and at various other points along the railroad. There was no attack made by the cavalry except at Lee's mills, where General Gregg encountering cavalry, drove them away to water his horses. When it was known that our offensive operations were suspended, orders were sent to the cavalry that they should push on as far as possible and find out the enemy's position, but the original orders about going into town were modified, inasmuch as the operations in our immediate front were suspended.

I desire to say to the court, that it has not been my disposition or intention to throw censure upon anybody for the unfortunate failure ; that, indeed, I have not been furnished with the necessary information to enable me to do so. I have not yet received Major General Burnside's or his subordinate commanders' official reports.

I have very little knowledge of what actually transpired except from the despatches you have heard read here. I have been groping in the dark since the commencement of the attack. I did not wish to take any unpleasant measures, but I thought it my duty to suggest to the President of the United States that this matter should be investigated, and that the censure should be made to rest upon those who are entitled to it. What I have done has been to show that I tried to do all I could to insure success.

During the day General Burnside and some of his staff, Generals Potter and Ferrero of the 9th corps, were present.

The court adjourned to meet at 10 o'clock a. m. on the 9th.

THIRD DAY.

COURT ROOM, HEADQUARTERS SECOND CORPS,

August 9, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayers and Miles, and Colonel Schriver, judge advocate.

The reading of the record of the second day was proceeded with until suspended at page 30, document 25, by General Burnside's verbal application to have all the documents bearing date after 2 o'clock p. m. on the 30th July, and all evidence relating to events subsequent to that time, removed from the record, the reasons for which, by direction of the court, were reduced to writing, and presented as follows:

HEADQUARTERS NINTH ARMY CORPS,

August 9, 1864.

GENTLEMEN: I beg to submit to the court that all testimony, whether by despatches or otherwise, relating to occurrences subsequent to 2 p. m. on 30th July last, at which time our troops had withdrawn from the enemy's line, and the assault was over, should be erased from the record, and no such evidence admitted in future.

The terms of the order appointing the court distinctly limit the action of the court to reporting the "facts and circumstances attending the unsuccessful assault on the enemy's position on the 30th July, 1864," and "their opinion whether any officer or officers are answerable for the want of success of said assault," and whatever events happened subsequent to the withdrawal have no relation to the success or want of success of the assault, and are not within the purview of the court.

Moreover, certain of these subsequent occurrences have been made the subject of charge against me by the major general commanding the army, and on which charges I am to be tried by another court. They, therefore, should not be investigated by this court.

I am, gentlemen, very respectfully, your obedient servant,

A. E. BURNSIDE, *Major General.*

COURT OF INQUIRY,

Maj. Gen. HANCOCK, *President.*

The following paper was then submitted by Major General Meade:

"I respectfully submit to the court that the objection raised by Major General Burnside is not tenable. As I have before said, I consider my conduct the subject of the court's investigation. To show that I was not, and could not be, held responsible for the manner of the withdrawal, and the circumstances attending it, it is necessary for me to show that I was not furnished with any information; and furthermore, I claim the right to show in evidence that no effort on my part was omitted to obtain the necessary information.

"Independent of this personal consideration, and my rights as one whose conduct is under examination, I beg leave, also, to submit that the receiving of these official despatches in this case cannot, in any way, affect the case of General Burnside when on trial on the charges referred to by him. Those charges are disobedience of orders, and have no reference to his management of affairs on the 30th, because, even should it be proved to the satisfaction of the court (and I shall be glad to hear that it is) that General Burnside is in no way

responsible for the lamentable failure on the 30th, it does not alter the facts of the case whether he obeyed or disobeyed my orders on that or any other occasion.

"This is a foreign matter, stands on its own merits, and has no connexion with the proceedings of this court, beyond the fact that these documents will be produced in both cases.

"Again, I respectfully submit, General Burnside's objections should have been made earlier in the proceedings, because among the charges preferred against him is one based on the very disrespectful despatch sent by him to me at light, a. m. July 30th, and this despatch should be thrown out on the same ground, which would at once prevent me from stating my case in the manner in which I claim I have the right to.

"I beg leave to call the attention of the court to the hour of 2 o'clock being specified in General Burnside's objections, and ask the court to note that there is no evidence before them when the assault, if any, was made, or what occurred at 2 o'clock.

"I take it this court must modify the rules which would govern courts of inquiry when the conduct of only one individual is called in question. This court has to pass judgment on the conduct of numerous officers, and the relative rights of each should be considered.

"As I understand it, no one in particular is arraigned here, and, therefore, what occurs here can only be repeated elsewhere to the detriment of any of the parties concerned, and must be repeated.

"These are official documents, part of the archives of the army of the Potomac, and their production in my vindication will give no weight to their production against General Burnside, should he be tried on the charge of disobedience of orders. For these reasons I must respectfully insist on the court's receiving them."

General Burnside then submitted the following :

"In reply to General Meade's argument, I beg to say that there is no evidence on the record, and none furnished by the documents in question, that General Meade did in any way, by aide-de-camp or otherwise, use means to obtain any information in reference to the withdrawal, or anything that occurred after he left my headquarters about 11 o'clock, until after 6 o'clock in the evening, instead of, as he states, no effort being omitted on his part to obtain the necessary information. Nor was such effort made, to my knowledge. General Meade himself states, in his argument, that the charges have no reference to the management of affairs on the 30th, and as these charges contain in full the documents to which I object, they therefore should be excluded here.

"A. E. BURNSIDE, *Major General.*"

The court was cleared. The court was opened, and the following decision of the court announced :

The proper time for objection to the reception of evidence is when it is offered and before accepted. Due notice was given to all persons who were supposed to be interested in the investigation (of whom General Burnside was one) to be present if they so willed. The court, however, decides that the evidence, documentary and verbal, in question, has a bearing on the conduct of individuals other than General Burnside. The court is ordered to examine into the "facts and circumstances attending the unsuccessful assault on the enemy's position on the 30th July," and the authorities permit a court of inquiry to enter into such incidental examination of particular points as may become necessary to a full understanding of the matter at issue.

The court therefore considers it a duty to examine into all the circumstances of the assault, the subsequent withdrawal of the troops, and everything connected therewith.

The judge advocate continued the reading of the record of the second day, and, on completion, it was approved, several corrections having been made by the witness, whose meaning had not been fully understood.

The examination of Major General Meade was then resumed.

Question by judge advocate. When did Mott's division leave Deep Bottom, and arrive at the 18th corps to relieve it?

Answer. Orders were given in person to Major General Hancock about 5 or 6 o'clock on the evening of the 28th, requiring him to withdraw Mott's division, then in his line of battle, in the presence of the enemy, after dark, and send it to report to General Ord, commanding the 18th corps. Orders were subsequently given to General Ord, when the division came up, about daylight on the 29th, to mass it in the woods near the railroad, out of sight of the enemy, and at dark on the evening of the 29th to put it in his trenches to relieve his corps.

Adjourned till 10 o'clock a. m. on the 10th.

FOURTH DAY.

COURT ROOM, HEADQUARTERS SECOND CORPS,

August 10, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayres and Milcs, and Colonel Schriver, judge advocate.

There were also present Generals Ferrero, Potter, and Wilcox, of the 9th corps, General Mott, of the 2d, and General Carr, of the 18th.

The proceedings of the third day were read and approved.

Testimony of General Meade continued.

Questions by General Burnside:

Question. Where were your headquarters during the action of the 30th?

Answer. From four o'clock until about eleven—I am not exactly confident as to the time of leaving it—my headquarters, as announced in the order of battle on the day previous, were established at the headquarters of the 9th corps. At eleven o'clock, or about that time, as near as I can remember, I removed to the headquarters of the army of the Potomac, which are situated about three-quarters of a mile to the eastward of the headquarters of the 9th corps, and are in telegraphic communication with the same headquarters where I remained during the rest of the day.

Question. How far was that from the scene of action?

Answer. If by the scene of action is meant the crater of the mine and that portion of the enemy's line in front of it, so far as I have knowledge of the ground, derived from maps, I should suppose that the headquarters of the 9th corps were possibly a mile to the eastward of the crater, and my headquarters are three-quarters of a mile, as I stated, beyond that, still further to the east.

Question. Could anything of the action be seen from there?

Answer. Nothing could be seen from any of the points that I occupied.

Question. Did you go further to the front during the action? If so, where?

Answer. I did not leave the headquarters of the 9th corps during the active operations.

Question. Did you not know that there were several positions on our line where you could see the action for yourself, and yet be in as proper a place for you as in General Burnside's permanent camp, and also have full personal communication with Generals Burnside and Ord, and be much nearer to General Warren, and likewise have telegraphic communication with the rest of the army?

Answer. I undoubtedly was aware that there were points of the line where I could see more of the action than I could see at the position I occupied, but I

was not aware that there was any point where I could see anything particularly, or on which I could base any orders. I adopted the position I did in consequence of its being a central one, and in telegraphic communication with all parts of the line where officers were stationed with whom it was necessary to communicate; and having a large staff, and many communications to receive, and many persons to communicate with, and being there in telegraphic communication, I considered it more proper to remain where I announced to the army my headquarters would be, and where all information could be sent to me, than to make any change of position as intimated in the question. Besides which, I desire to say to this court that it has been a matter of policy with me to place myself in such position that my communications made, and the replies made thereto, should be made in such way as a record could be kept of them, and not be confined to verbal communications, which are often subject to misapprehension and to misconstruction. There undoubtedly was telegraphic communication from General Burnside's headquarters in the field—the fourteen-gun battery, as it was called—with the other headquarters in the army.

Question. Did you not have an aide-de-camp with General Burnside during most of the action?

Answer. During a portion of the time I did have Captain Sanders, aide-de-camp, at the headquarters of General Burnside. I sent him there in consequence of not receiving any communication from General Burnside, in the hope that he would be enabled to send me some information.

Question. Was not Captain Sanders sent there before the mine exploded?

Answer. No, sir; he was sent there some considerable time after the mine exploded; that is, upon the duty that I now refer to. I have previously stated to the court that before the mine exploded I sent two officers to endeavor to explain the delay. One was Captain Jay and one might have been Captain Sanders; but they returned before the explosion of the mine. After the explosion of the mine I sent Captain Sanders on the duty that I now refer to, which was to remain at General Burnside's headquarters and communicate to me anything which he could ascertain. I think it further proper to add to this answer to this question that, finding I did not get the information which I desired to have, or which I thought I could have, and fearing that my having sent an aide-de-camp—the object being to facilitate the transmission of information—might be used to deter responsible officers from communicating information to the commanding general, I withdrew Captain Sanders, before the action closed, by an order.

Question. For what purpose was he sent? Was it not to report to you the state and progress of affairs, and did he not so report?

Answer. I have already answered the first part of that question. As to his reports, all the despatches from him are on file in my evidence before the court. As to whether he reported all that he should have reported, and all the information to be obtained, I presume the court will ascertain from him and from other evidence.

Question. Was there any information not furnished you by General Burnside, or through other sources, which, if received, would have influenced your conduct of the action? If so, what?

Answer. I have already informed the court that all the information I received has been placed before them in the shape of official documents. It is impossible for me to say what my action would have been if I had received any other information. I acted upon the information I received.

Question. What time did Captain Sanders leave General Burnside to return to you?

Answer. I should say it was about half past eight; between that and nine, as near as I can recollect. I have a copy of the order to him, which I can furnish if desired.

Question. You state that General Burnside's despatch of 9 a. m. was the first

information you had received that any collision had taken place, or that there was any enemy in our front; had you not, before the receipt of this despatch, written to General Burnside in reference to General Griffin's attack and repulse; also, received a despatch from Captain Sanders speaking of captured colors; also, seen and examined rebel prisoners taken that morning?

Answer. In reply to that question, I would say that I am willing to assume that there is an apparent discrepancy in my testimony, which I am very glad to have an opportunity of explaining. I should suppose that any one cognizant of the circumstances that took place on that day, even of the most general nature, would know that I never meant to say that I did not know that there was no enemy anywhere. I was fully aware that when the crater was occupied a number of prisoners were taken. I was also aware that the enemy occupied their lines both on the right and on the left of the position occupied by General Burnside; and I did know that Captain Sanders had made a report of captured colors, and that an attack had been made in front of Griffin; but my whole attention was absorbed in the endeavor to have a charge made to the crest, and my thoughts were all upon that; and when I said this was the first intimation I had of there being any enemy in the front, I meant any enemy so situated as to prevent a direct assault upon the crest. Besides which, I must throw myself upon the consideration of the court, and say that the vast number of despatches, the frequency with which they were sent and received, was such that my memory may not serve me well, and the incidents may be, in a measure, not related in the exact order in which they occurred. I wish to call the attention of the court to a very important fact for the benefit of General Burnside, if it results to his benefit as well as to mine, and that is the difficulty of having the time of these despatches uniform. A despatch is sent to me marked with the time of the officer who sends it, but the time by his watch may be ten or fifteen minutes different from mine. But I do honestly and conscientiously say that that was the first positive information, when I received that despatch that the men of the 9th and 18th corps were returning, that I had that there was any such force or disposition of the enemy as to render it questionable that that assault could be made.

General Burnside here remarked, "I want the record in such a shape as to enable the casual reader and the revising officer to see that there was, before that time, an effort on my part, or on the part of some person near me, to give information, and not an effort to cast any imputation on General Meade, and I do not desire to invalidate his testimony, but simply to elaborate. I am confident that there is no disposition on the part of General Meade to make erroneous statements."

Question. Have you a note written me by you about two weeks before the assault as to the practicability of an assault in my front, my answer thereto, your second letter, and my reply, and will you be kind enough to furnish copies?

Answer. I presume that those documents, like all other official documents, are on file. I will have a search made for them, and as soon as they are discovered will very cheerfully furnish General Burnside or the court a copy of them.

[General Burnside explained that one of them was a semi-official letter, and General Meade, being reminded of the purport of it, answered that he did not think he had it.]

By the court:

Question. What knowledge had you of the movements of the different divisions of the enemy on July 30?

Answer. I had very positive information from deserters, not only those who came within my own lines here, but those who came into the lines of General Butler, and those who came into the lines of General Hancock, that there were

but three divisions of the enemy in our front, consisting of Mahone's division of Hill's corps, and Johnson's and Hoke's divisions of Longstreet's corps; and that the other divisions of Lee's army were on the north side of the James river, confronting Generals Hancock and Sheridan, on the 29th. I also received the same information from prisoners taken that morning. During the operations I received information from the signal officer on the plank road that the enemy were moving troops from their right to their centre, which I anticipated, and upon receiving that information the orders were sent to General Warren to endeavor to turn the enemy's right by pushing forward General Crawford, and to General Wilson to push on without delay, without waiting for the arrival of General Sheridan, coming from Deep Bottom.

Question. Did the order to suspend operations (given about 9 a. m., July 30) originate with Lieutenant General Grant?

Answer. No, sir; the order, I think, originated with myself. Some time before the order was given I informed Lieutenant General Grant that, as far as I could see, there was no prospect of our succeeding in the manner in which we had expected to do; that the time had passed for the coup-de-main to succeed; and I suggested to him that we should immediately withdraw the troops, to which he acceded. About that time a despatch was received from the signal officer of the 5th corps, stating that the colored troops had captured a brigade of the enemy, with four of their colors, to which, although, I did not attach much importance, not knowing how a signal officer could see an operation of that kind when it did not come to me from the officer in charge of the operation. We, nevertheless, suspended this order and held it in abeyance until the arrival of the despatch of General Burnside, informing me that some of the men of the 18th and 9th corps were retiring, and I think also that the Lieutenant General himself rode down to our trenches and made some personal examination, and had seen General Ord, and had some conversation with him. Upon his return, from what he had heard from General Ord, and subsequently an officer coming in and saying that the colored troops, instead of capturing a brigade and four colors, had themselves retired in great confusion, which information, I think, was given me by Major Fisher, the chief signal officer, I again referred the subject to the lieutenant general, and again gave him my opinion that, as it was then about 9.25, it was unnecessary to make any other efforts, and an unnecessary sacrifice of life; my idea being that they could be withdrawn without any difficulty then, or we should have difficulty later in the day in withdrawing them. To this he assented, and the order was given to withdraw them. Afterwards, when the information was received from General Burnside of the difficulty of retiring, then the order was modified.

Question. Were any instructions given for destroying the bridges in Petersburg in case the crest was gained?

Answer. There were not, for two reasons; and first, if we had succeeded, as I hoped we would, in overcoming the enemy, we should have driven them across the Appomattox, and should have wanted those bridges to follow them, but the contingency of their destroying those bridges was held in view, and it was to meet that contingency that the chief engineer was ordered to have a pontoon train brought up so that we could throw our own bridges. My expectation was that if we had succeeded in the coup-de-main, these three divisions of the enemy would have gone out of our way, and we should be enabled to cross not only the Appomattox, but also Swift run, and open up communication with General Butler at Bermuda Hundred before General Lee could send any re-enforcements from the five divisions that he was known to have north of the James river.

Major General A. E. BURNSIDE, United States volunteers, duly sworn, says:

Soon after this army arrived before Petersburg, I received a note from General Potter, stating that if it was desirable the fort in front of his position could, in his opinion, be mined; and that he would, at my request, make a statement of the matter, or would come to my headquarters with Colonel Pleasants, of the 48th Pennsylvania, and lay the matter before me verbally.

I sent him word that I would be glad to take the matter into consideration, and accordingly he and Colonel Pleasants came to my headquarters and laid before me a plan for running a mine to that position. In the course of the conversation Colonel Pleasants remarked to me that this thing had first been suggested by the men of his regiment, who, I think, were stationed in the advance line, and pretty much all of whom were miners from Schuylkill county, Pennsylvania. The matter was fully discussed, and I authorized General Potter to commence the work—making the remark, if I remember right, that it could certainly do no harm to commence it, and it was probably better that the men should be occupied in that way, and I would lay the matter before General Meade at my earliest opportunity. We parted with that understanding, and the work was commenced.

Probably at the first interview that I had with General Meade I mentioned the matter to him. He said to me that he had no instructions in reference to siege operations in his front; that that was a matter for the lieutenant general to decide upon; that he could not authorize any work of that kind, but he would acquiesce in it; and I am inclined to think that I have upon record a letter to the same effect from General Meade. This work was started and progressed with the full knowledge of General Meade; in fact, I was in almost daily communication with him, and much conversation was had upon that subject.

When the gallery was first started there were many discouragements, in the way of prophecies as to its failure, which had to be overcome, and a great many suggestions as to the mode by which the work should proceed. I, however, left the matter entirely in the hands of General Potter, Colonel Pleasants and his regiment, feeling satisfied that these miners had experience in matters of that kind, which would enable them to accomplish this work.

When it began to be demonstrated that we would probably reach a point under the enemy's fort, conversations were had with reference to the feasibility of an assault after the explosion had taken place. Feeling that the old troops of the 9th corps had experienced very hard service during the campaign, and had been in so many engagements that they were very much wearied, and their ranks thinned, I made up my mind, if I was called on to make an assault with the 9th corps, to place the 4th division under General Ferrero in the advance, inasmuch as that division had not suffered so severely—in fact, had not been in any general engagement during the campaign, but had frequently been very honorably engaged on the outposts of the army. General Ferrero himself, and all his officers, expressed to me their utmost confidence in his troops, and especially his confidence in their ability to make a charge, or, in other words, a dash. I accordingly instructed him to drill his troops with a view to leading the advance, in case the 9th corps was called upon to make the attack.

Soon after this, General Meade called upon me for a statement as to the practicability of making an assault in my front, which call seemed to have been general, or, rather, seemed to have been made upon all the generals commanding corps then on the advance line. I answered him, giving to him, as I conceived to be, under the circumstances, a proper opinion, stating that I thought the chances were fair that a successful assault could be made from my front if it could be supported in a specific way, and I could have the discretion of determining when the supporting columns should be put in. General Meade answered me to the effect that he commanded this army, and that he could not

give to any one the authority to determine as to the time that his troops should be put in action; that he would be glad to receive from me at all times such suggestions as I might make, but that he himself would take the responsibility of re-enforcing any force that he should see fit to order in action, or words to that effect. I at once wrote him a letter, stating that I had no disposition whatever to claim the right to put other troops than my own in action; that I had simply made this suggestion because I had given troops to other corps commanders to support their columns, which they themselves had used during the campaign without any interference on my part, and I simply meant to ask what I had granted to others. That while I was certainly not anxious to put my own troops in action, the troops of any other corps could be called upon to make the assault; that I was fully willing to accord to General Meade more military skill than I possessed, and more ability to put troops in action, but that my troops had been given to corps commanders, both on my right and on my left, and placed in action by them; and as I before said, I simply desired to have accorded to me what I had accorded to them.

It was decided, I believe, at that time, that no assault should be made; but I, notwithstanding, sent for General Ferrero, and directed him to go down to our advance line and select positions for concentrating his division, to look at the positions on the line over which he had to pass, and to reconnoitre the ground over which his division would have to pass in an assault upon Cemetery hill. I also directed him to send his brigade commanders down for the same purpose, and indicated to him exactly the position which I wanted him to take, and the parts of the line over which I desired him to pass. I requested that he would present to me a plan for the manœuvring of his troops in case an assault of that kind were ordered.

In accordance with that, General Ferrero presented me a plan which is in substance laid down in my plan of attack, and contained in the proceedings already before you.—(See document L.) I approved of this plan, especially that part of it which contemplated the movement of troops to the right and left of the breach which we might make in the line, in order to allow the other column to proceed to the front without any molestation from any of the enemy that might be left in the rifle-pits on the right and left of the breach. This must have been fifteen or twenty days, if not more, before the assault was made. I was afterwards informed by General Ferrero that his troops had been drilled for a movement of that kind, and was informed by a large number of his officers that it was their understanding that they were to make an attack with them; that, if I mistake not, they had passed over lines on intrenchments, performing the movement with a view to familiarizing their men with the movement, and they each and all expressed to me the greatest possible confidence in their ability to accomplish the work, which I considered a very material element in making the movement.

Nothing of importance occurred for a few days before the mine was sprung, except ordinary conversations with reference to the charge which was to be placed in the mine.

I, myself, from a long experience in experiments with gunpowder—having been a manufacturer of arms several years before the war commenced, and in constant practice with fire-arms—had a particular view with reference to the mode in which the mine should be charged, and the amount of charge to be placed in it. It was not in accordance with the methods laid down in scientific works upon the subject of military mining, but entirely in accordance with all experience in mining and blasting by civil engineers, within the last two or three years, since the method of heavy tamping had been abandoned. It is not worth while for me to enter here into an explanation of my theory, because I can present the report of the officer who built the mine, and that will explain the matter fully. It is sufficient to say that the mine was charged partially

upon my theory, and partially upon the theory of the old-established plan of military mining. In the theory which I decided to be adopted, large charges could be used without detriment, in my opinion, to persons in the immediate proximity of the mine; but persons who were not of my opinion felt that the effect of this mine at great distances, with the charge which I proposed to place in it, would be very great; and it became, from some cause or other, known to my troops, both officers and men, that a difference of opinion of that kind had arisen, and to such an extent that I have had general officers come to me and ask me if I did not think the charge I was putting in the mine was too large. I did not think the charge so large that there was danger of injuring our own men. This feeling among the men had a certain effect which I will leave for the court to decide, and, if they request it, I will send them the names of witnesses who have mentioned to me that impression on the subject long before the mine exploded, so that there can be no mistake as to the impression that prevailed at the time. I, myself, was satisfied, without knowing definitely that the charge which I desired to place in the mine could be placed there with safety. I witnessed this anxiety among the troops with a good deal of concern. But that it did not prevail in the division which it was supposed would make the assault—it not being then upon our lines—was a source of gratification to me. This court will see, by looking at the documents which General Meade has presented, that I was directed to keep the amount of powder placed in the chambers within the limits of rules prescribed by military works upon that subject. I, however, in several verbal communications with General Meade, insisted upon the other method; and it was finally decided that we should place in the mine eight thousand pounds of powder, instead of twelve thousand pounds. The ground that I took was this: that the depth of the mine, or rather the bottom of the chambers, was fixed; the greater the explosion, the greater the crater-radius, and less inclination would be given the sides of the crater, and the greater breach on the right and left of the charges would be made, thereby giving a greater space for the troops to pass over, and a less inclination for them to pass up and down in the line. It was, however, determined that eight thousand pounds of powder should be put in, instead of twelve, and the mine was accordingly exploded with that charge. The decision in reference to the charge to be placed in the mine was given in ample time to let me make arrangements for that amount of powder.

The general facts and movements connected with this army, for the first three or four days previous to the fight, are so well known to the court that I will not delay them by any statement as to my correspondence and personal intercourse, or anything of that nature, up to Thursday before the fight.

On that day (Thursday, two days before the fight) I went to General Meade's headquarters. He spoke to me in this way:

"I have received information that it is impossible for General Hancock to advance beyond his present position; he has succeeded in inflicting upon the enemy a severe punishment, and captured some four pieces of cannon, but is not able to advance beyond that point;" (or, at any rate, it was decided that he should not advance beyond that point.) "A large force of the enemy from this position has been attracted to that side of the river by this movement of General Hancock, and General Grant desires that an attack should be made here." (I think he made that last remark, but I will not be positive; he either said that General Grant desired, or he, himself, desired that an attack should be made.) He asked how long it would take to charge the mine. There was some correspondence before and after that time—I do not know if it is in your proceedings or not—in reference to the time necessary to charge the mine. I think it very likely that General Meade has placed all the documents before you. Previous to this he had written to me to present my *project* for this movement, which is now before you. During this conversation, on Thursday, he said to

me: "I cannot approve of your placing the negro troops in the advance, as proposed in your project." I asked him why. He said: "Because I do not think they should be called upon to do as important a work as that which you propose to do, certainly not called upon to lead," or words to that effect. I, in a considerable conversation, urged upon General Meade the necessity for placing General Ferrero's division in the advance. I stated to him that the three white divisions had been on the advance line, and under fire from the moment of the establishment of the line, on the 18th or 19th of June, until that time; that they were very much wearied, had contracted a habit of covering themselves by every method within their reach, and that I was satisfied they were not in a condition to make anything like as much of a dash upon the enemy's line as General Ferrero's division, which had not been under any considerable fire from the time of its arrival at this place to that moment. I told him I considered my troops to be as good as they ever were, with the exception of this weariness, and the habit—which had almost become a second nature—of protecting themselves from the fire of the enemy. In fact, upon this subject I was very, very urgent.

I will here present to the court some of the reasons for forming this opinion, which reasons were presented to General Meade. Take an intermediate date, say the 20th of July, and there were, for duty, nine thousand and twenty-three (9,023) muskets in the three old divisions of the ninth corps, which occupied the line. From the 20th of June, which was after the fight at this place, to the day before the fight on the 30th day of July, these divisions lost as follows:

Killed, 12 officers, 231 men; wounded, 44 officers, 851 men; missing, 12 men, making a total of 1,150 men; which is over twelve (12) per cent. of the command, without a single assault on the part of the enemy, or of our own troops. These casualties were caused from picket firing and shell firing, and extended pretty evenly over the whole line. I think that the whole of General Wilcox's division was on the line for thirty days, or more, without relief. General Potter's and General Ledlie's divisions had some small reliefs, enabling those gentlemen to draw some of their men off at intervals, for two or three days at a time, at certain intervals during this period.

A considerable portion of our line was so situated as to render it impossible to keep pickets to the front of them. It was, in fact, situated very much as a portion of the line occupied by the second corps, at Coal Harbor. As I stated before, I stated these facts to General Meade, except that I will not say that I gave him these exact figures; but the full substance of what I have stated here was given to him, together with the statement of the loss of officers and men, and the way in which the losses occurred. And, in fact, statements were made regularly to General Meade, so that these facts were in his possession, but were not made with the same particularity to him as I have made them here.

The ninth corps also lost in the fight of the 17th and 18th of June 2,903 men, and in the action of the 30th of July 3,828.

The following are the figures, more in detail:

June 17 and 18—killed, 29 officers, 348 men; wounded, 106 officers, 1,851 men; missing, 15 officers, 554 men. Total, 2,903.

July 30—killed, 52 officers, 376 men; wounded, 105 officers, 1,556 men; missing, 87 officers, 1,652 men. Total, 3,828.

General Meade said to me that he was going to see General Grant, and would submit the question to him as to whether the colored troops would be allowed to take the advance or not. This, as I said, was on Thursday—I think in the forenoon. He said to me that he would start at one o'clock, and would return that evening.

I parted with him, and on the next morning, not having heard anything from General Meade, and knowing, from information that I had received, that he had

returned from City Point during the evening, I imagined that no further action was to be taken in the matter, and that I was to be allowed to place the fourth division in the advance.

On Friday forenoon General Wilcox and General Potter, two of my division commanders, came to my headquarters, and we talked over the matter of the fight which was to take place on Saturday morning. I said to one or both of them to this effect: that I had been very much worried and troubled the day before lest General Meade would overrule that part of my plan which contemplated the putting in of the colored troops; but that I hoped nothing further would be heard from it, because General Meade had gone to City Point the day before, and the matter was to be referred to General Grant; and that inasmuch as I had not heard from General Meade, I took it for granted that he had decided to allow the thing to remain as it was. This I must necessarily give in substance, because my conversations with my division commanders are not guarded. They can be called upon themselves to state what they know about the matter.

Soon after that, say eleven o'clock, Generals Meade and Ord came to my headquarters. I am under the impression that I broached the subject myself as to the colored division taking the advance, but whether I did or not, he informed me that General Grant coincided with him in opinion, and it was decided that I could not put that division in advance. I felt, and I suppose I expressed, and showed, very great disappointment at this announcement; and finally, in the conversation which occurred, and to which there are two witnesses here present, I asked General Meade if that decision could not be changed. He said: "No, general, it cannot; it is final, and you must put in your white troops." No doubt in the conversation I gave some of the reasons for not wishing to put the white troops in that I had given at his headquarters, but of that I am not certain.

This was the day before the fight. I said to General Meade that that would necessarily change my plan. Now, this conversation either occurred at that time, or it occurred at a later hour in the day, say one or two o'clock, when General Meade returned to my headquarters; because he went off with General Ord for an hour or two, say, and returned to my headquarters. It is not impossible that this conversation occurred in the afternoon, instead of in the forenoon of the 29th.

After some conversation with Generals Wilcox and Potter as to which troops should take the advance, one of them remarked to me that I had better send for General Ledlie, and we would talk the matter over as to which one of the divisions should take the advance. I sent for General Ledlie, and after some discussion of the matter, I decided that, taking everything into consideration, it should be but fair that these gentlemen should cast lots for the advance. General Wilcox was probably better situated as to position for the advance, as his troops then were, than either of the other divisions, certainly than General Ledlie; but his troops, as I stated before, had been constantly on the line, with the exception of an intermission of a day or two, which rendered it, if anything, desirable that General Ledlie's troops should lead instead of his. General Potter's troops had been, next to General Wilcox's, more constantly on the line, and I think he was, next to him, better situated for the advance; but, as I have indicated by previous remarks, General Ledlie's division was less fatigued, and in my opinion it was more just to call upon them to make the charge, and they had fought as gallantly as troops could fight on the 17th, and I therefore did not hesitate to call upon them in consequence of any lack of faith in their courage.

So I said, "It will be fair to cast lots," and so they did cast lots, and General Ledlie drew the advance. He at once left my headquarters in a very cheerful mood to make his arrangements for the advance, as no time could be

lost in making the necessary arrangements, as it was then certainly three o'clock in the afternoon, and the assault was to be made next morning.

I directed him to take his brigade commanders and go to the front with Colonel Loring, my inspector general, who was entirely conversant with the ground, and I indicated to Colonel Loring about the position I desired General Ledlie to take, and I also stated verbally to General Wilcox and General Potter about the positions I desired them to take with their division; and the ground being familiar to all of us, enabled us to talk very understandingly and easily upon the subject. General Potter expressed some doubt as to finding room enough on the right of the covered way to place his troops, of which I was in doubt myself, the general instructions being for General Potter to mass all his troops, if possible, on the right of his covered way, General Wilcox to occupy his covered way and such portions of the railroad cut as was necessary, and room to be found between the two for General Ledlie, who had the assaulting column. At all events, there was, as far as I know, a distinct understanding between myself and my division commanders as to the positions to be occupied by the troops. Not that they did finally occupy exactly the positions which I indicated to them, because some of them were immaterially modified by correspondence, I think, between Generals Wilcox, Potter, and myself. It is sufficient to say that General Ledlie's troops were massed in about the same position as I had desired to mass General Ferrero. The arrangement which General Meade objected to, of sending troops down to the right and left to clear the way, was dispensed with; it having been understood before that that was a part of the plan or of the arrangements, the plan was made to accord with General Meade's views; in other words, in consequence of his objection, I did not give any instructions for troops to pass down to the right and left, but to make at once for the crest.

The commanding general had been urgent in his views, that in order to carry the crest—that is, Cemetery hill—a dash must be made at it without reference to formation; that there would be no time for manœuvring; that if we attempted to handle the troops as proposed in my plan, he was satisfied it would be a failure. If I mistake not, the amount of these views was expressed before General Potter and General Wilcox. Generals Meade and Ord called at my headquarters and had a conversation there in reference to my plans. General Ord went with General Meade to our signal station, and General Ord took a look at the position of the enemy. After returning to my headquarters, General Ord said he would send staff officers to me to report, in order that they also might reconnoitre the ground and pick out positions for troops. Instead of staff officers coming, I think that in almost every instance the general officers of General Ord's corps came themselves. I gave them facilities for reconnoitring the position of the enemy, and also gave them instructions as to where these troops were to mass in rear of our lines. I received General Meade's order, which is on your record. I sent him a copy of my order, which I have not here at present, but which I will procure and present at the end of my evidence. There were some details into which I did not enter in this order, in consequence of the verbal understanding which existed between myself and my division commanders; that fact, I believe, being noted in the order.

During that night our troops were concentrated in accordance with those orders, ready for the attack; and General Ord's troops were also concentrated as nearly as possible in accordance with my understanding with his officers. During the night some changes were necessarily made in the positions of General Ord's troops—changes which are always consequent upon the movement of as large a body of men as a corps in the night; but every effort, in my opinion, was made by his officers, and also by my own, to carry out to the letter the instructions given by General Meade and by myself. Inasmuch as you will have an opportunity of examining both of these orders at your leisure, it will not be necessary for me to enter into the details as to the movements that were directed.

The action was to commence with the explosion of the mine, which was ordered to take place at half past three o'clock. It may not be amiss to state here that the mine had been ready charged since the 23d. General Potter was ordered to see that Colonel Pleasants exploded the mine at the time indicated by General Meade.

My order for the movement of the 30th stated that I would make my headquarters at the fourteen-gun battery, which is not far from the centre of the line occupied by the 9th corps. Just before leaving my permanent headquarters, say at two o'clock in the morning, there came from General Meade a despatch stating that if I desired to delay the time for the explosion of the mine in consequence of the darkness, I could do so. I telegraphed him back that the mine would be exploded at the hour designated. I went to the place designated as my headquarters at the proper time, and, like every one else, awaited with great anxiety the explosion of the mine. I need not say to this court that my anxiety on the occasion was extreme, particularly as I did not know the reason of the delay. I waited for several minutes, and thinking that there was some miscalculation as to the time it would take the fuse to burn up to the charge, I sent an aide-de-camp to find out what was the reason of the delay. Soon after that I sent a second aide-de-camp. Soon after that time Major Van Buren arrived at my headquarters and told me the cause of the delay. In the mean time Captain Sanders, I think, or some other one of General Meade's staff, came to my headquarters to know the reason. I said to him that I had sent to ascertain the reason; that I could not tell him then. Another despatch, either written or verbal, came to know the reason, and I sent word again that I did not know the reason, but as soon as I could ascertain it I would give the general the reason. I then got another despatch from General Meade, that if the mine had failed I must make a charge independent of the explosion of the mine. Having almost made up my own mind that the mine had failed, or that something had occurred which we could not discover during that morning, and feeling the absolute necessity, as General Meade expressed in his despatch, of doing something very quickly, I was on the eve of sending an order for the command to be ready to move forward, as directed by General Meade; but I said again, "I will delay, to ascertain what is the reason of the non-explosion of the mine."

I had nothing that I could report up to the time that Major Van Buren came to my headquarters. I gave to those aids freely the statement that I did not know the reason of the non-explosion of the mine, but that as soon as I learnt it I would inform the commanding general. As I before stated, Major Van Buren came to my headquarters and told me that the fuze had gone out, and that a gallant soldier named Sergeant Reese, of the 48th Pennsylvania, had volunteered to go into the gallery to ascertain whether the fuze was really burning still and burning slowly, or whether it had failed. He discovered that it had failed, and refired it; and Major Van Buren further said that General Potter told him that the mine was to explode at a certain minute. This was, I think, within eleven minutes of the time of the explosion. I am not sure that I did not receive a similar message from an aide-de-camp to General Potter. I think I did.

Within one minute of the time designated by Major Van Buren—and it was a fact which was cognizant to every one—I was not with the advance column of troops that was to make the charge. I understand that there was considerable anxiety among the men, after and before the explosion, as to the effect it might have upon them, and I have been informed by Colonel Loring, my inspector general, (who may be called before this court,) who was with the column, that it took probably five minutes to get the men in perfect condition to dash forward. After their ranks were re-established, they went forward, as far as I could see or know, or hear, in the most gallant possible style, until they arrived within

the crater. Here, owing to the inequalities of the ground, and possibly other reasons, which will be matters of investigation in this court, there was a pause, the men to a considerable extent disorganized, and it was so reported to me. I will state here, though, that I have not been able to make up my mind that any set of troops of this army, or any other army, that had gone through the labor that these troops had gone through for the last thirty days, could be made to do better than they did upon that occasion.

I saw with me there, at my headquarters, Captain Sanders. I think I remarked to him that I was glad he was to be with me on that day, as he had been with me during the fight on the 18th, and had been the means of communication between General Meade and myself; and I was very much pleased that he was present with me on that morning, and I think I so expressed myself. At all events, my impression was—he did not tell me so—that he was to remain with me during the morning. The despatches I received from General Meade, which I hope the court will examine carefully, bore the marks of very great anxiety—such as I was at the time feeling—to learn the information which I was about the same time endeavoring to learn, and at the same time unable to give him; and I so stated to his aides-de-camp. I, of course, was glad that no movement was made by me (as General Meade must be) in accordance with the order to attack in case the mine had failed.

From that time until the time that the troops were withdrawn I endeavored to give at all important points—I do not mean in minutiae—to General Meade by telegraph, and to Captain Sanders by word, all the information of which I was possessed. I, of course, was in a position in which I could examine the movements of the troops. For half an hour at a time I would be away from my headquarters. I went with General Warren once down the covered way to the front. The covered way was full of troops, and there was no way of going on horseback or of carrying any number of staff officers; and from the positions we were to reconnoitre, it would not have been advisable to carry any number of officers to that point. The despatches that I sent to General Meade are, I think, on record; and I think, if carefully examined without reference to the numerous despatches I received from him, it will be ascertained that at every important epoch correct and definite information was sent to him, either by Captain Sanders or myself, up to the receipt of a despatch which was misunderstood by me, and which appears upon your record, and bears the positive certainty of insubordination, for which I must be responsible and must necessarily suffer. I will state the circumstances under which the despatch was given me. It was handed to me by Captain Jay, who came up to me and said, "General Meade desires me to say that this is for you personally," or words to that effect, no doubt meaning that it was for my personal attention. I misunderstood the tenor of it, no doubt; read it and put in my answer, which is also on record before you.

The orders that I gave from time to time to my division commanders were principally verbal orders given through my aides-de-camp. I had with each division a responsible aide-de-camp, who was in constant communication with me, and, if I mistake not, I did not receive from Generals Ferrero or Ledlie a single written despatch, and but one or two each from Generals Potter and Wilcox; but at the same time, I received verbally frequent information of all that was going on in order to enable me to direct the movements of my troops.

After giving orders for all the white troops to be shoved in, and sending additional orders forward, which were also reiterated by division commanders, for the troops to advance and move upon the crest in accordance with the understanding and plan of the night before, which were plain and distinct, I received from General Meade an order to put in my whole force and move for the crest at once. I had not done this because I was satisfied that there was very great

difficulty attending the formation of the troops in the crater, in consequence of the great number there.

I have since learned that considerable progress had been made in the formation at that time; indeed, the troops were progressing to the right and left, and, to my knowledge, had driven the enemy; General Potter to the right, and General Wilcox to the left.

A despatch, which was intended for me, from Colonel Loring, went to my old headquarters, and was read by General Meade. I was cognizant of that fact, and I knew that General Meade was aware of the circumstances which surrounded the troops at that place, because General Meade sent an orderly with a message stating that he had read the despatch himself. It was therefore not necessary for me to re-communicate the information I had received from Colonel Loring. After my three divisions had been put into the position they occupied in the works, I hesitated to put in this colored division.

I remember having told General Meade that in case the colored division should falter in the advance, I did not think it would affect our old white divisions—certainly as to holding their position; that if the white divisions were to falter in the advance, it would be impossible to get the black division to pass them. I am not sure but I told him this the very day before the battle, in my tent. I received from General Meade an order to put in my whole force, which I did. I sent an order to General Ferrero to go to the top of the crest with his division. One of my aids was there at the time, Colonel Loring, and took the responsibility of saying that that should be stopped, because he was satisfied that I had not received his despatch. He came to me, and I said my orders were peremptory to put in my whole command, and he himself told General Ferrero to put in his division at once, and go to the top of the crest if possible. The colored division was put in, and from what I can learn, no officers or men behaved with greater gallantry than they did. After passing the white troops and attempting something like a formation they were driven back by the enemy, and driven through the white troops, the white troops, or the principal portion of them, still maintaining their position, fighting as gallantly as three divisions ever fought.

I witnessed this repulse myself, and at the same time saw that the enemy had been repulsed by our own white troops, the black troops coming to the rear to a very considerable extent.

There is one point to which I wish to call the attention of the court. I sent to General Meade a despatch at 6. 20, stating that if General Warren's reserve force could be concentrated at that time, I thought it would be well, or something to that effect, and I would designate to him when that force should be put in. To that despatch you have the answer.

Not far from that time General Warren came himself to my headquarters, if not exactly at that time. I then said to him, "General, let us look at this position," having in view answering the question which General Meade desired me to answer. General Warren and I went down to the front, leaving my headquarters, and going down a covered way until we got to a position on the left-hand side of General Potter's covered way beyond. We got on a mound of earth, and reconnoitred the enemy's position until we were satisfied. I said to General Warren, "I think your plan would be to strike across by the fort which enfiladed our line," or something to that effect. At any rate, whatever opinion I expressed to General Warren, it is sufficient to say that he told me that he should go back and explain to General Meade the circumstances, and, if possible, to get him to come to the front and look for himself. That of course satisfied me with reference to that point of General Meade's inquiry.

Although this narrative is very disconnected, I believe I have stated in it all the material points.

I do not know of a single order of mine that was not carried out by my di-

vision commanders. I do not know of any lack of energy on their part in carrying out my views, and the views of the commanding general, except, possibly, in the case of General Ledlie, who was quite sick on that day, and who, I thought afterwards, ought to have gone to the crater the moment his men were in. But I understood that he was very sick, and could hardly have walked that far under the oppressive heat. He was within one hundred and twenty (120) yards of his brigades, I should say.

Between half past nine and ten o'clock I received two despatches from General Meade with reference to withdrawal. They are marked numbers 12 and 15 in the record before you. I was very much concerned in reference to the matter, because, although we had met with some reverses, I could not help feeling myself that we could hold the position which we occupied, if we could not gain more ground. In fact I was under the impression at the time that we were gaining ground in the direction of the enemy's rifle pits to the right and left, and I felt that if troops were put in on our left flank, that then we would have been enabled to establish ourselves on the enemy's line, which, of course, would have made our position secure. However, that is simply a matter of opinion, upon which the commanding general had to decide. I also felt that if we could gain no more ground, we could run out lines at an angle to the crater, and establish a salient upon the enemy's lines, which would be of material advantage to us in future operations, particularly in making him vacate that part of the line which is now opposite my front, and in fact, as I had not given up all hopes of carrying the crest even, if a positive and decided effort were made by all the troops. But feeling disinclined to withdraw the troops, I got on my horse and rode over to General Meade's headquarters, which were at my permanent headquarters. He and General Grant were there together. General Ord and I entered the tent, and General Meade questioned General Ord as to the practicability of his troops being withdrawn. I made the remark that none of General Ord's troops were in the enemy's line, and he would have no trouble in withdrawing; that none but the troops of the ninth corps were in the line, and I thought that my opinion on that subject would probably be a proper one to be received, and I stated that I did not think that we had fought long enough that day; that I felt that the crest could still be carried if a decided effort were made to carry it. To that I received the reply that the order was final, or something to that effect.

General Meade, in his evidence, states that I gave no reasons why I thought the crest could be carried; and it will not be amiss for me to say that no reasons were asked, and that he simply stated that the order was final. I was then satisfied that the best time to withdraw those troops would be after nightfall; that it would be best to retain possession of the place till after nightfall. I thought, from reports which I had received from my aides-de-camp and division commanders, that we could then withdraw the troops. I had myself witnessed a very handsome repulse of the enemy by our troops just before leaving to go to General Meade's headquarters.

[At this point the court took a recess. After recess, General Burnside resumed his testimony, saying:]

I will supply one or two omissions in this disjointed narrative now. Some time before I received the order from General Meade to put in my whole force, I received a verbal message from General Wilcox, by one of his aids, Captain Brackett, that it was useless to send more troops up that line at that point; that all the troops were there that could be handled or could be used, or words to that effect; and that an immediate attack should be made, both upon our right and left. That is as far as I can remember of the message. I am under the impression I immediately transmitted this message to General Meade, either by a staff officer of my own, or by one of his. I also said that, in several conversations with General Meade, I stated to him that I was satisfied that the explosion of the mine in our front, and the advance of our troops, would enable

a strong skirmish line to carry everything on the left. I am of the impression that I expressed that opinion to General Meade the day before the fight, in the presence of General Potter and General Wilcox. I know that I expressed it to him half a dozen times. After it had been decided by General Meade, finally, that the troops were to be withdrawn, I was necessarily very much exercised as to the best method of withdrawal. I had directed General White, who was acting on that day as chief of staff, to remain on the line until he heard from me, and that I would send him the result of my interview with General Meade. I wish to read here the despatch I sent him, and the accompanying note written by General White :

UNITED STATES MILITARY TELEGRAPH,
Headquarters Ninth Army Corps, July 30, 1864.

I have no discretion in the matter. The order is peremptory to withdraw. It may be best to intrench where we are for the present; but we must withdraw as soon as practicable and prudent.

A. E. BURNSIDE,
Major General.

Brigadier General WHITE,
Chief of Staff.

Division commanders will instruct in accordance with the within despatch; the officers on the line to consult and determine the time of evacuation.

By order of Major General Burnside :

J. WHITE,
Brigadier General and Chief of Staff.

Official :

EDWARD M. NIEL,
Assistant Adjutant General.

I sent for my division commanders after sending that despatch. Feeling confident, from the reports I had received, that our people would be able to hold the position which they then occupied, until night certainly, and feeling that, if they were not, one time for evacuation was about as good as another, I thought it best to have a perfect understanding as to the method of withdrawal. They came to my headquarters, and it was decided that we should dig a trench or trenches from our main line to the crater, and thereby enable them to withdraw without serious loss. It will be remembered that this distance is but a little over one hundred yards, and taking into consideration the radius of the crater, it is probably less than that distance. General Wilcox had already given instructions, as he informed me, and as I know, to dig a trench connecting our advance line with the crater, and I am not sure that the other division commanders had not commenced like operations. I remember the fact being stated, at the conversation at my headquarters, that the work was going on; and that was decided upon as the best method of withdrawal. The despatch which I sent to General White, and which I have just handed to the court, was received by him in time to be read by two of the division commanders before they left the front for my headquarters, and was forwarded by them to the general officers in the crater.

One of those general officers was taken prisoner, and the other two are available as witnesses before this court. Their names are Generals Hartrauft and Griffin. As to the effect of this despatch, I will leave it for the persons present to give evidence of, particularly as an important despatch from myself to General Meade, here, contains my opinion of it.

Adjourned till August 11.

FIFTH DAY.

COURT ROOM, HEADQUARTERS SECOND CORPS,
August 11, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

The proceedings of the 4th day were read (General Burnside's testimony first) and approved, after various corrections by General Burnside.

Generals Ferrero, Wilcox, and Potter were present also.

General Burnside's testimony continued:

In concluding my testimony, I simply desire to call the attention of the court to the fact that important evidence before them would indicate that I had not given proper information of what was going on in my front during the action on the 30th, and to say to them that, up to the time the mine was exploded, there was nothing possible for me to report, because I could not answer questions which General Meade propounded to me by one or two different despatches, except by saying that I did not know the reason for the delay, and as soon as I learnt it I would inform him of it, which I think I did by verbal communications, either by Captain Sanders or Captain Jay. As soon as I ascertained the cause of the delay, I requested Major Van Buren, who informed me of it, to state to Captain Jay, fully, the causes, and he will be able to state to you whether he did so or not.

The explosion of the mine, as I before said, was a fact evident to every one along the line, and each and every command there had its orders to do a certain work, which were so explicit as to enable them to move at once to that work: first, orders to corps commanders under General Meade; next, orders from corps commanders to their division commanders, and so on.

I reported to General Meade by despatch when we made a breach in the enemy's works, as will be seen by your record. I also reported to him soon after, in answer to probably frequent anxious despatches, that we were endeavoring to advance—that it was hard work, but that we hoped to succeed; which was the full extent of the knowledge then in my possession, and all that I could learn from personal observation of the contest in the neighborhood of the breach. Soon after he received the report of my inspector general, stating the condition of the troops in the crater, and in the rifle-pits to the right and left of it. This report was intended for me, but was opened by General Meade and sent to me by him. The obligation resting upon me to send him a copy was therefore removed, inasmuch as I knew that he had already seen its contents, from his own statement. I reported to him a short time after that, or just before, that I thought it was the proper time to concentrate General Warren's troops, and that I would indicate to him the time when I thought they ought to go in, for there was hardly room at that time for them to go in on our front. I received an answer from him stating the object of his despatch, and that he desired to know if it was practicable for General Warren's force to be put in upon our left. At about that time, certainly before I could determine the fact, I came into contact with General Warren personally at my headquarters, and he and I made the personal reconnaissance that has been before alluded to. I parted with General Warren with the distinct understanding that he was to report to General Meade the condition of affairs in his front, and, as I before said, with the statement that he would endeavor to get General Meade to come to the front himself, which I considered to be sufficient answer to General Meade's despatch, particularly as

General Warren went directly from me to the telegraph office. It is possible that in this I made a mistake.

At another juncture I reported to him that I thought that was the time for General Warren to be put in promptly. Soon after that time, and before it would have been possible for me to have sent any other intelligent report, I received orders to withdraw the troops to our own intrenchments.

During the engagement General Meade also received from Captain Sanders, his aide-de-camp, who was at my headquarters, certainly three written despatches and one verbal despatch, which he acknowledges, independent of the verbal despatch which I speak of giving to him before the explosion of the mine. I desire to say that Captain Sanders was near me constantly; knows that I never failed to give an aide-de-camp, situated as he is, every possible information; heard all my conversations with my aides-de-camp, and I think had free access to every despatch and report that reached me from the front or from my division commanders. I learned personally, in presence of General Humphrey's chief of staff of the army of the Potomac, that that was the understanding of Captain Sanders.

There were some papers which I desired to have removed from the record of this court in consequence of certain conditions which surrounded them, and which this court has made a very proper decision upon; but as they form a portion of the record, it becomes necessary for me also to state some of the circumstances which surround one of these papers, which was a despatch sent by me to General Meade containing an objectionable remark, which will be recognized on the record by all the members of the court. In conversation with two mutual friends of General Meade and myself, I became satisfied that I had misunderstood the note which he had sent me from the front on that morning. I obtained permission to go to City Point to see General Grant, and I stated to him the circumstances of the case, among other things upon which we conversed. I left him with the understanding that I should return and withdraw the letter which I had written to General Meade. General Wilson, of the cavalry, was present at this interview. I returned to my headquarters and found upon my table charges preferred against me, and a request that I should be relieved from command in this army, against neither of which have I any complaint to make, but simply make this explanation to remove any responsibility from the shoulders of General Meade which might possibly attach to the letter which he wrote to me, and which I imagined at the time indicated a belief on his part that I was not disposed to tell him the truth on the day of the action.

When I went to my headquarters at my permanent camp and learned from General Meade himself that the order to withdraw was final, I at the same time learned that offensive operations had ceased on both the flanks of the line which we had occupied, and to which we were ordered to withdraw.

I have stated to the court, as well as I knew how, the means taken by me to effect that withdrawal securely, with one exception, I think, which is that I started General Ferrero off at once with definite instructions to put all the force that he could get to work to dig a trench or trenches from our old line to the crater, in order that our men might come out, and that he started off on the moment. What followed that will no doubt be inquired into by the court.

Soon after I learned that offensive operations were to cease on our flanks, it became evident that all the operations of this corps were to be independent. General Meade left my headquarters, making no request of me for information. I received no despatch from him until the evening of the day after which the troops were driven out of the crater, and to a certain extent were re-established in our own lines. The negligence on my part to report after that time I will not attempt to justify myself for, by any reasons, before this court, inasmuch as it will probably become the subject of charges pertaining to things that took place long after the troops had come inside of our own lines.

I should not dwell so fully upon my rule of conduct in matters of this kind, but for the fact that matters of a like nature have been elaborated upon in evidence which now lies before this court. I can readily conceive General Meade's anxiety, which would induce him to write frequent despatches; but in my rule of conduct with my officers I have rather cultivated the idea that frequent despatches, unless they are well authenticated, are not desirable—particularly despatches with reference to the condition of the troops and calls for re-enforcements.

I endeavored during my movements on that day to obey every order that was given to me. I put every single man of the 9th corps in action. I was not called upon to fight a field fight. There was no opportunity to manœuvre troops. There was no discretion about looking out for flanks beyond that which fell upon commanders managing their troops in action; there was simply an obligation on my part to rush these troops through the crater and gain the top of the crest, without reference to formation; and I put three divisions on as promptly as I knew how. And when I received the order to put my whole force in, I threw the fourth division in, with the most positive and distinct orders to my division commanders, given in the evidence before this court. I had no possible chance to push batteries forward to protect the flanks, or of moving troops forward to protect them; I simply had to gain the crest. I obeyed every order to the best of my ability, and did everything that I could do to place my troops in that position.

I have not elaborated as much as to the features of the ground in my front at the mine as I might have done, and I will not delay the court with it now. I will endeavor to make that as distinct as possible in my official report, which will probably be prepared by to-morrow morning, and will probably be laid before this court, together with the reports of the division and brigade commanders of my command.

I desire now to insert certain papers here, which relate to the evidence that I have given before you. The battle-order of General Meade is already before you. The document I now hand you is the circular containing the battle-order to my corps—(Document 60.) I sent a copy of this to General Ord, General Warren, and to the headquarters of the army, and I should have sent a copy to General Hancock had he been here at that time.

I present now the order for the siege, dated July 9, directing operations on this line, and desire to state, as the reason for presenting it, that the works on my front had been conducted with the understanding that there would be an attempt made to capture the position of the enemy by military operations, conducted under the chief engineer of this army and the chief of artillery, together with the corps commanders.—(Document 61.)

I now desire to present a copy of a correspondence between General Meade and myself early in July. The first is an answer of mine to a circular sent to corps commanders with a view to ascertaining what were the chances of the success of an assault in their fronts, and is as follows.—(Document 62.)

I beg to say here that this is specifically an answer in reference to an assault in my front, which was the only opinion I was required to give. The second document is General Meade's answer to my letter, and is as follows:—(Document 63.) My reason for stating that my answer to General Meade was semi-official, and that the whole correspondence was of that nature was the fact that it is marked at the top "confidential." The despatches sent by General Meade to me were marked likewise, but in this copy that is omitted. The envelopes, at least, were marked "confidential."—(Document 64.)

Questions by the judge advocate :

Question. Were you in a position to see all the operations of the assault before Petersburg, or how much of them?

Answer. I was in a position, at different times, to see every particle of the

assault before Petersburg—at one time in one position, at another in another. Not that I desire to convey the impression that I was all the time looking to the front; but that, at proper intervals of time, I could see all that was desirable to see.

Question. What was the distance from the fourteen-gun battery to the crater?

Answer. I should say six hundred or six hundred and fifty yards. I wish to state that, whilst at my headquarters, in order to get a look at what was going on on certain portions of the front, we placed ourselves upon the magazine of the fort, or upon the high ground just in rear of the fort, or upon the high ground just to the right or left of the fort. I was, however, frequently to a considerable extent in advance of the fort, as was the case when General Warren and myself made our reconnoissance; and I also visited a commanding position on the opposite side of General Potter's covered way during the engagement, from which other parts of the line could be seen. The fort I refer to is the fourteen-gun battery, which is established immediately in rear of the old brick wall and chimneys, and is essentially on our main line, say fifty yards to the rear. The advance line is about one hundred and fifteen yards from the crater; the main line is about four hundred yards from that, and then the battery is a short distance, say fifty yards, in rear of the main line. But the position from which most of the movements could be seen was in advance of the main line, between the two lines.

Question. What preparations were made for the passage of the attacking columns from the breastworks, as directed by General Meade's order?

Answer. All the preparations were directed to be made that were possible, such as removing *abatis*, and so forth, as directed by General Meade's order; but it was not expected by any one that any considerable success could attend any work of that kind without serious loss to the command, and discovery on the part of the enemy. The *abatis* in front, which was the only serious obstruction, was very much cut up by the enemy's fire, and did not present as serious an obstacle to the movement of troops as it would be supposed by a person hearing that the *abatis* still remained in front of the line. I have never ascertained from any one that the troops were at all obstructed in passing over, and I am therefore free to say I made no special inquiry upon that subject. If I remember right, it is the first time it has occurred to me since the reading of General Meade's order; but I do remember that not much was expected to be done, in view of our close proximity to the enemy. This refers to the front, over which the troops had to pass. I will state definitely that there was no expectation on my part that that portion of the order could be carried out without discovery, and without very great harm to the troops that would have to prepare this work, and in my order I placed no clause of that nature; but it was distinctly understood that the troops were to be provided with pioneer tools and other means of clearing away such obstructions as might be in the way—understood between myself and the division commanders.

Question. Did you intend that the obstructions should not be removed until the pioneers advanced with the columns, or did you intend that they were to be removed by the division commanders the night before, and what division commanders were charged with the execution of that order?

Answer. I did not intend any of my division commanders to do any work in the way of removing obstructions on that night, because I did not expect that they could do it; and, besides, I was ordered to be relieved on the line by General Ord's troops, and to concentrate my troops for the assault. But I will state again that there was an understanding between the division commanders and myself that anything that could be done in that direction would be done. I did not expect them to do anything; there was no order to that effect from me, unless it was contained in my verbal orders to the division commanders. My remarks now apply to work on the advance line, where I did not suppose

any work could be done without discovery by the enemy, in consequence of its close proximity to the enemy's line to the front of the main line. There were covered ways cut both to General Wilcox's and to General Potter's front.

Question. What time elapsed from the springing of the mine to the forward movement of the assaulting columns, and how long was it before the crater was reached by the storming party?

Answer. At the risk of involving the same difference in time as in similar matters, I will state that it was about five minutes until the advance column moved forward, and say ten minutes before the leading column reached the crater. This delay occurred in consequence of the hesitation which has been already alluded to in my evidence, but not personally known to me, and it is not impossible that I may be mistaken as to the time. There was only one column started to move to the crater, because the divisions were ordered to go in succession, the first division, General Ledlie commanding, leading, in consequence of the probability that a breach would not be made sufficiently broad in the enemy's line to admit more than one column, my intention up to the day of the attack being to make the assault by my plan, which you have before you.

Question. To what did you attribute the halting of the troops in the crater instead of proceeding to the crest immediately as by the order?

Answer. To the breaking up of the column in consequence of the inequality of the ground, and to the continual habit of the men for the last thirty or forty days of protecting themselves by almost every obstruction they came in contact with.

Question. In what order and tactical formation were your divisions ordered to go in?

Answer. I ordered the division commanders to use their discretion in carrying their divisions in, giving them my general views on the subject, my general directions being to carry them in if possible in column by regiments; but the regiments being so unequal—some being not more than one hundred strong, and some six or seven hundred—it was thought best for them to go in in such formation as to be able to deploy rapidly in two lines as soon as they gained the crest, General Ledlie taking the centre, General Potter taking the line perpendicular to the main line of works, and General Wilcox the line parallel to the Jerusalem plank-road.

Question. Were these movements of the divisions successive or simultaneous?

Answer. They were successive.

Question. What was the interval between them?

Answer. General Ledlie was to move first; General Wilcox was to follow General Ledlie as soon as possible after General Ledlie had cleared the breach; then General Potter was to follow General Wilcox. As soon as I ascertained that General Ledlie had made a halt, I sent orders at once to General Wilcox and to General Potter to proceed, without reference to General Ledlie, in the order in which they had been directed to move. I ordered them to go in at once without reference to going through the breach, and proceed at once, as before directed, without reference to General Ledlie, thinking that if they could find room to get through to the right and left, and could move forward, it would enable General Ledlie also to move forward with his troops. And, finally, General Ferrero was moved, upon the last order from General Meade to put in my whole force. I think that the troops were moved forward as rapidly as they could be moved forward under the circumstances, and I know that they did not pass by the flanks of General Ledlie to go to the crest; but it was in consequence of obstacles produced by the firing of the enemy and the rough ground in the crater of the enemy's works. But they did go to the right and left, driving away a considerable portion of the enemy from those lines, and made several distinct attempts to charge to the front. My own opinion is, that the principal obstacle was the presence of the enemy to our right and left.

which enabled them, the moment our troops attempted to advance to the top of the crest, to give them a fire in the rear.

Question. For what distance on each side of the crater were the enemy's works abandoned immediately after the explosion of the mine?

Answer. I should say one hundred and fifty yards, or more, on each side.

Question. To your own personal knowledge did any of your troops get beyond the crater, and how far towards the crest?

Answer. As far as I could see, there were lines formed beyond the crater, and attempts made to charge, but the lines were repulsed; but to say how far, I would not be willing to express an opinion.

Question. Can you tell how far it was from the crater to the crest?

Answer. From the crater to the crest, I should say, was five hundred yards.

Question. How long did your troops remain in the crater before the order was given to retire?

Answer. The order was given to retire, I think, about half past nine. When the order was given to retire, I went to General Meade's headquarters, consulted with him, ascertained that it was final, and decided that our best method of retiring was to hold the crater until dark, and then retire by trenches.

(The question was repeated, and the witness requested to give a more specific answer.)

Question. How long did your troops remain in the crater before the order was given to retire?

Answer. They remained there until about two o'clock. I think the order reached them about 11.40. They remained there about four hours before the order was given to me to retire.

Question. Did Generals Wilcox's and Potter's divisions attack the crest, or did they proceed perpendicularly along the enemy's intrenchments to the right and to the left?

Answer. The principal part of their movements was in that direction, with all possible directions to move to the front as fast as possible.

Question. Had you authority to put in the supports, (of other corps,) or had any one else who was present and could see what was going on?

Answer. Although I can designate no order upon which I had a right to put in supports, yet I am satisfied that any support which I called upon General Ord for would have been given me; and it is almost impossible that there was such an order. At all events, he expressed every willingness to give me all the support possible, no matter what the movements of his troops were, and consulted freely with me, and asked me at what points I thought he ought to put his corps in. I told him I thought it could move off to our right, and make a very considerable diversion in our favor, or something to that effect, and he told me that he had issued an order to that effect. He spoke of the ground being broken in that direction, and wanted to know if I thought he could go over my lines of works. I told him I thought he could; that it is the same ground that Generals Wilcox and Potter fought over on the 18th, and that a portion of his column could move forward in that direction, the balance moving down the covered way.

Question. Were you the senior officer present, and did you regard yourself responsible for putting in at the proper time the troops designated as supports in orders?

Answer. I was the senior officer present in front of my own corps; but I never dreamed of having any authority whatever to order in the troops of any other corps. I might have had authority to call upon other troops, but I had no authority to order any in that I know of.

Question. You don't consider yourself responsible for anything further than your own corps?

Answer. No, sir, except as to make such suggestions as I thought were

proper. I did not think that I had any general command that day. In fact, I had no authority to order in any other troops than my own corps, General Meade having specially reserved that right to himself in the correspondence before you.

The court then adjourned to meet at ten o'clock a. m. on the 12th instant.

SIXTH DAY.

COURT ROOM, HEADQUARTERS SECOND CORPS, *August 12, 1864.*

The court met pursuant to adjournment.

Present : Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

The proceedings of the 5th day were read and approved.

The testimony of Major General Burnside was resumed.

Questions by the judge advocate :

Question. What brigade commanders were in and about the crater near the enemy's line ?

Answer. All the brigade commanders of the corps, I think.

Question. What division commanders ?

Answer. I do not know positively that any division commander was in the crater, unless possibly General Potter. Their headquarters were upon the advance line, something over one hundred yards from the crater.

Question. Please describe the covered ways through which the troops passed from the rear up to your line, how long they were, and their direction with reference to your line of works.

Answer. Both the covered ways were, in general direction, perpendicular to the advance line, particularly just before approaching it. There were advantages taken of the depression of the ground in rear that made certain portions of them at angles to the line—some obtuse and some acute. The covered ways were built so as to enable columns to move under comparatively good shelter entirely up to our advance line, or, in other words, to the low ground just in rear of our advance line, and were capable of allowing regiments to pass by twos if not by fours. The commencement of all the covered ways was in the depressed ground in rear of the main line, or, in other words, in rear of the fourteen-gun battery ; and I should think that they would average, including the zigzag, a thousand yards.

Question. In what formation did the colored troops move to the assault ?

Answer. The colored troops moved from their position in rear of our advance line by flank up to the position we had carried in the enemy's line, and from there endeavored to move in line to the front.

Question. Could General Ord's troops get into action at any other point than at the crater ?

Answer. I received positive information from General Potter that his troops were not in the way, and that General Ord's could have moved to the right, and I distinctly understood from General Ord that he had given orders for his troops to move to the right of the ground that we occupied. As to how many obstacles they would have met in that movement I am not here prepared to say. I am satisfied of one thing, that General Ord gave the necessary orders for an advance in that direction. As to the efforts that were made, I am not personally cognizant. General Potter, who held the right of our line, is a more intelligent witness upon that point than I am.

Question. Did any officer report to you that his troops could not be got forward?

Answer. No, sir. I received a report from Colonel Loring, which General Meade opened, stating to me that there was great difficulty in getting the troops to move from that crater, or something to that effect. That paper is lost, as far as I can find. I have ordered it to be looked for. But Colonel Loring was not a commander of troops; he was an aide-de-camp of mine. But no commander of troops reported to me that his troops could not be brought forward.

Question. Please state what were the obstacles, *abatis* or other obstacles, in front of the enemy's line in the neighborhood of the crater. Were they a serious opposition to the passage of troops?

Answer. On the right and left of the crater, beyond the parts that had been effected by the explosion, there were both *abatis* and *chevaux-de-frise*, principally the latter, constructed by placing rails in the parapet, sharpening the points, and, I suppose, tying them back, or putting in sticks, to hold them in their positions; but of that I cannot say, because I was not close enough to determine that fact. Considerable *abatis* was in one portion of the line, lying upon these rails, which the enemy had not been able to place in consequence of the constant fire from our troops in the front line. I do not think the obstacle was remarkably formidable, but it was a sufficient obstacle to stop the progress of troops. There would have been a necessity for their removal by pioneers before troops could have passed over.

Question. How much of the enemy's breastworks were blown up by the springing of the mine? How much of the *abatis* destroyed?

Answer. The report of Colonel Pleasants will be before you, and he will give you that exactly. I should place it at from one hundred and forty-five to one hundred and fifty feet, say one hundred and fifty feet. There was not as much of their line disturbed as I expected. I supposed that for a considerable distance on the right and left of the line the earth would have been so much disturbed as to cause *chevaux-de-frise* to fall from the parapet.

Question. Was the ground around the crater commanded by the ground held by the enemy?

Answer. Yes, sir; to a very great extent.

Question. What was your opinion at the time of the force of the enemy resisting your advance on the 30th of July?

Answer. From data received by me, and especially from a despatch received very soon before the order to withdraw came, I judged there was about a division and a half, certainly not to exceed two divisions. This force consisted of troops that were in the line when the mine was exploded, and troops that were moved from the enemy's right. No troops were reported to me as having moved from the enemy's left. There was a signal station in front of my line from which, I think, any important movement of troops from the enemy's left could have been discovered. They certainly could not have approached our line from the enemy's left without being observed. I received a despatch from my signal officer, Captain Paine, stating that the enemy's right was very much weakened. This was not communicated to me direct, inasmuch as I had left my headquarters to visit General Potter's, and it did not reach me in time to communicate the substance of it to General Meade before the orders to withdraw came.

Question. What was the nature of the enemy's fire concentrated on the crater, immediately after the explosion of the mine—how much artillery fire? Please explain that, if you know.

Answer. The artillery fire was very light indeed, and had the advance troops been in condition to assault, and made the kind of an assault that they could have made, or that they had made in the beginning of the campaign, there is no

doubt in my mind but they could have gained the crest. For a long time, comparatively speaking, the fire, both of musketry and artillery, was very light. What I mean by a long time is fifteen minutes, say.

Question. Why did not your troops remain, as you wished, to hold the crater, and for what purpose did you propose to hold it?

Answer. I received a positive order to withdraw to our intrenchments. I left my chief of staff with a view to getting that order rescinded. Finding that it was final, I telegraphed to him to that effect, and he communicated to the general officers in the crater that the order was final. In fact, he sent a copy of my telegram to them. My reason for desiring to hold the crater was, that if we could have connected it with diagonal lines reaching from a point, say one hundred and fifty yards to the right, to General Potter's extreme left, and another line extending to it from our old line one hundred and fifty yards from General Wilcox's extreme right, we would have a salient which would have been quite as easy to hold, if not more easy, than the one we now hold, and would have given us, I think, command of a considerable portion of the enemy's line both on our right and left, forcing him, I think, even if we had made no further attempt to carry the crest, to move his whole line back to that position.

Question. You have said somewhere in the testimony that 3,828 was the 9th corps' loss. At what phase of the action did the loss chiefly occur?

Answer. I have already given a detailed account of the killed, wounded, and prisoners. A large proportion of the prisoners were lost after the order to withdraw had been received, and I think a considerable portion of the killed and wounded. I will not venture to say now that so great a proportion occurred after that time as was indicated in the despatch sent by me to General Meade, and which is now before the court; but that was not far wrong, in my opinion.

Question. Why were the men withdrawn at the time they were?

Answer. The despatch stating that there was a final order to withdraw had reached the crater, and it was known to both officers and men that such a despatch was in existence. At the last assault of the enemy, General Hartrauft gave the order to his command to withdraw, and sent word down the line that he had given this order; and such portion of the command as could get out of the crater and the enemy's lines returned to our own lines. General Hartrauft was not, in fact, authorized to make such a movement; but I have not the slightest doubt in my own mind but he thought he was carrying out the spirit of the order. It was one of those misunderstandings which are so likely to happen at so critical a time. He had before reported that they would be able to hold their position, which report was made previous to any knowledge on his part of the fact that we were ordered peremptorily to withdraw.

Question. Did any troops, to your knowledge, misbehave, fail to go forward when ordered, or disobey orders in any way or at any time during the action? If so, name them.

Answer. A considerable portion of the troops failed to go forward after repeated orders from their officers and extreme efforts to cause them to advance; but I do not believe that, under the circumstances, any of the troops can be counted guilty of misbehavior. It is a fact that the black troops broke and ran to the rear in considerable of a panic, which indicates misbehavior; but they went in late, found in the enemy's works quite a mass of our own troops unable to advance, and during their formation, and, in fact, during their advance between the two lines, they were subjected to probably the hottest fire that any troops had been subjected to during the day; and I do not know that it is reasonable to suppose that after the loss of so great a portion of their officers they could have been expected to maintain their position. They certainly moved forward as gallantly under the first fire, and until their ranks were broken, as any troops I ever saw in action.

Question. Who conducted the retirement of the troops from the crater?

Answer. That question is entirely answered by the answer to the question previously put, but I will reiterate it. General Hartrauft, unexpectedly to me and to the division commanders, made a move with his brigade in consequence of the receipt of the despatch to which I have referred, and the word was passed along the line to retire, upon which all the troops came back to our lines that could get back.

Question. Where were the division commanders while the troops were in the crater?

Answer. The division commanders were at their headquarters on our old advance line, say one hundred and fifteen yards from the crater, moving at intervals from one point to another at that line, until it was decided that the order to withdraw was final, when I sent for the division commanders to come to my headquarters to arrange for the withdrawal; soon after which I sent General Ferrero to make arrangements for digging trenches. In fact, preparations had already been made for that purpose before the division commanders came to my headquarters. Before this work could be done the troops were driven from the crater in the manner in which I have designated.

By the court:

Question. How did all your troops cross from the advance line of works to the assault—by the flank or in line?

Answer. Generals Ledlie and Wilcox crossed in line, Generals Potter and Ferrero by flank.

Question. Could the troops of the different divisions have been formed, the night previous to the assault, in lines parallel to the advance line, and near it?

Answer. They were formed in that position as nearly as possible, all of the advanced division being formed exactly in that way.

Question. Was the mine placed under charge of the engineer department of the army of the Potomac?

Answer. No, sir, it was not. In fact, two of the young engineers who reported for duty at my headquarters stated expressly that they were instructed that they had nothing to do with the mine.

Question. Were there working parties detailed to follow the assaulting troops, carrying tools, gabions, and so forth, to crown the crest when gained?

Answer. Yes, sir. There was an engineer regiment detailed to follow each division of white troops, with all the necessary tools; and all necessary preparations were made for pioneers in the division of colored troops. There were no instructions to carry gabions, but all these engineer regiments were fully equipped with necessary tools for intrenching, if we had been successful in crowning the crest.

Question. Why did not the division commanders go to the front, particularly when the troops ceased to advance?

Answer. I do not know.

Question. Was General Hartrauft in command in the crater?

Answer. He was not in command in the crater.

Question. Had you been permitted to put your corps into action according to your own views—that is, the colored division in advance—do you think the result would have been different?

Answer. For reasons already given, and given before the fight, and from observations on that day, I am forced to believe that the fourth division (the colored division) would have made a more impetuous and successful assault than the leading division.

The receipt of orders requiring the presence elsewhere of two members of the court caused its adjournment until it should be reconvened by the President, or some other proper authority.

SEVENTH DAY.

HEADQUARTERS SECOND CORPS,

Jones House, August 29, 1864.

The court met, pursuant to the orders from the President, at ten o'clock, a. m. Present: Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

The proceedings of the sixth day were read and approved.

The judge advocate submitted a letter which he received from Major General Burnside, respecting his testimony, as follows:

COLEMAN'S EUTAW HOUSE,

Baltimore, August 15, 1864.

COLONEL: You will remember that, in answering the last question put to me as to the reason none of my division commanders went into the crater, I made some explanation after saying "I don't know;" but it was finally decided to let the answer be, "I don't know."

Lest it may be understood to be a censure upon those officers, I beg to add to the answer the following: I think General Potter was in the crater, and I am satisfied that the others felt that they were in the best position to command, except General Ledlie, who, I understood, was sick. The court can determine.

Please lay this before the court, and believe me yours, very truly,

A. E. BURNSIDE, *Major General.*

These officers, with the exception of General Ledlie, have served with me long and gallantly, and I do not desire to do aught to injure their well-earned reputation.

COLONEL SCHRIVER,

Inspector General, Army of the Potomac, Judge Advocate, &c.

Record of the court of inquiry instituted by Special Order No. 258, 1864, War Department.

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Major I. C. DUANE, engineer corps, sworn, says to questions by the judge advocate:

Question. Were you present at the assault of the 30th of July, and in what capacity did you serve?

Answer. It was on the 5th corps front, assisting in directing the artillery fire.

Question. Can you produce maps showing the lines then occupied by the armies?

Rep. Com. 114-12.

Answer. Yes, sir. I here produce two maps, showing the general positions of the armies, and the position of the 9th corps in detail. These maps are marked Nos. 65 and 66, appendix.

Question. What, in your opinion, were some of the causes of failure on that occasion?

Answer. One cause was, that the troops, instead of moving up by division front, (column of division,) moved up by the flank. Another was, that they stopped in the crater, instead of pushing immediately forward. The points between which they could have taken on the ridge are the points on the map between Clark's house and Cemetery hill. Those being taken, Petersburg was in our possession. I have no doubt the enemy had guns in that position, but I do not know that he had any works; if there were any works there, they were screened by the trees. No guns were opened immediately after the assault. The distance from the crater to the crest is about five hundred yards.

Question. Could the troops have gone forward by division front?

Answer. I think they could if proper working parties had been sent to remove the abatis.

Question. Were there any working parties with them?

Answer. I do not know. I was directed not to interfere with General Burnside in his operations. I had no control over the operations in that part of the line.

Question. Were there engineer officers to lead or direct the assaulting columns?

Answer. Lieutenant Beuyaurd, of the engineers, was on duty on that front, and was available in case the general commanding that corps wished to make use of an engineer. Captain Farquhar was also on duty with the 18th corps, and was present, but not under my orders.

Question. What arrangements were made for facilitating the debouch of the troops from our lines and passage over the enemy's parapets?

Answer. I do not know.

Question. Were the obstructions at the enemy's line formidable? Of what did they consist?

Answer. They consisted of a strong rifle-pit, with a good abatis in front. Such obstructions are formidable, in case there are troops behind the parapets to defend them. In this instance there did not appear to be sufficient force behind the parapet to prevent these works being carried.

Question. How was our artillery fire as to effectiveness on that occasion?

Answer. It completely silenced the batteries of the enemy that were in position, and had been in position previous to this day, on the 5th corps front. I had nothing to do with the right, which was on the 18th corps line.

Question. In your opinion, was the point of attack a judicious one?

Answer. I did not consider it so, although there was a chance of success. The point of attack was on a re-entrant on the line, which exposed an attacking column to a fire on both flanks and front.

Question. Did you at any time make that known to the authorities?

Answer. I did, two or three days previous to the attack.

Question. In written or verbal communications?

Answer. I had frequently made it known verbally; two days previous to the attack, in writing, to the general commanding the army of the Potomac.

Question. Can you produce that report?

Answer. I can; and I will hand it to the judge advocate. (It is marked 67.)

Question. What is your opinion of the mine as a means of assault?

Answer. It is a very unusual way of attacking field fortifications. I do not think that there was any reasonable chance of success by such an attack.

Question. Had the engineer department anything to do with it?

Answer. It had not.

Question. Please to state what advantage would have resulted from holding the crater simply?

Answer. No advantage.

By the court:

Question. Did you see this explosion and assault?

Answer. I saw the explosion. I did not see the assault distinctly; I was too far to the left.

Question. You could not see how far to the right or left the enemy's parapet was abandoned, from any fire that came from it?

Answer. No, sir.

Question. What artillery of the enemy did you see open and play upon that assaulting column within the first fifteen minutes after the explosion?

Answer. I did not see any. They opened on our batteries, but I did not see them open on the column. I did not see them open on the column, and do not think they did. They opened with 30-pounders on us.

Question. Although you did not think the mine, as a means of assault, promised much success, do you believe, from the circumstances that transpired, it would have been a success had the troops gone to the top of the crest?

Answer. I believe it would.

Question. Do you believe that there was any difficulty in the way of the troops going to the crest during the first fifteen minutes?

Answer. I do not think there was the slightest difficulty.

Question. Do you think that, immediately after the explosion, had there been proper working parties at work, the parapet of the enemy could have been cleared of sufficient of the obstructions and abatis within the first fifteen minutes to have allowed a brigade front to have passed over?

Answer. Yes; I think there could.

Question. There was no other difficulty in crawling over the parapet except the fire?

Answer. No, sir; and the abatis was a loose abatis of limbs pitched over the parapet. In some places it was a rail abatis—rails inclined forward.

Question. What should the storming party have done when they reached the crest, had they reached it? what should have been their first operation—to have proceeded to Petersburg or intrenched themselves?

Answer. I think they should have intrenched on the crest. I do not think they could have stayed in Petersburg, as it was commanded.

Question. Had you ever been called upon for any gabions or any materials for making a parapet upon the enemy's intrenchments?

Answer. No, sir.

Question. Were any gabions prepared in this army except by the engineer department for those works?

Answer. None.

Question. Nor any other material of that kind—facines, and so forth—to assist in making a parapet?

Answer. No.

Brigadier General R. B. AYRES, United States volunteers, sworn by the judge advocate:

Question. General, were you present at the assault on the 30th of July, and had you facilities for seeing the progress of affairs on that day?

Answer. My division was a part of the command of the 5th corps, massed upon the right of the 5th corps, and upon the left of the 9th, in the railroad cut, for purposes indicated in the order of assault. I was directed by General Warren to make my headquarters with his at the five-gun battery, in the corner of the woods in front of the Avery house. I was in that position when the mine

was sprung and the assaulting columns went forward. The general directions of those columns as they marched forward were visible from this position. As the troops filed out we could see them distinctly. After quite a large force filed out there, they seemed to have formed a line of battle at one time along, in, or near the enemy's rifle-pits, adjacent to the mine. A body of troops also filed behind that line to the left, as we looked at them, apparently to march around the line and advance to the crest, which was the object to be gained—Cemetery hill. After a time I saw those troops go back again towards the right, coming in still behind that line of battle standing. Directly after this I was requested by General Warren to ride to the 15-gun battery, to see what chance offered me to put my division in on the left of the troops still standing, as I described. I went there, made an examination, turned to General Warren and stated to him that, as the troops were massed in our old line in rear of the mine in great crowds, it would be very difficult to march my division through there unless they made a way for me; but if a way was made I could march my division by the flank, face it to the left, sweep down to the left, carry a certain battery there was firing across, and clean out the rifle-pits they occupied. General Warren rode with me a second time there, immediately after this. First, my division was ordered to be closed up as soon as possible, to be in readiness; then we rode together to the 15-gun battery. As we crossed the field between this 5-gun battery and the 15-gun battery I saw the negro troops coming back to the rear like a sand-slide. By the time we got to the corner of the 15-gun battery numbers of them were sweeping through that—sweeping around from different quarters; some one side and some another, some into the covered ways and some into the field between. A close observation assured me that that line of battle which I first described was replaced by the enemy in the rifle-pits on the right of the mine. I saw their battle-flags, and their bullets fell around us. Some one then proposed that General Warren should immediately put in the 5th corps at that moment. General Warren and myself concluded that the time was passed; they had lost what they had, excepting those men who were left in the crater. And immediately after that we rode to our position at the 5-gun battery, and I received notice that the movement was suspended, and a few moments after orders to send my division to its camp.

Question. Please to relate some of the chief causes of failure on that occasion.

Answer. Firstly, those troops that went to make their attack seemed to be going out simply by the right flank from two covered ways; therefore, the heads of regiments arrived at the crater in that condition, when there should have been a line of battle arriving there. These men rushed into the crater, and a considerable amount of time was lost in endeavoring to get troops in some formation to advance properly in line of battle. Arrangements should have been made, that when that mine was sprung the troops which were to make the assault to carry the crest, which looked down upon the city, should advance in line of battle, so that they would have been in hand and subject to the command of their officers. That, in my judgment, was the principal cause of the failure. The commencement of the assault, in my judgment, was the cause of its entire failure. If those dispositions had been made, and those troops had advanced in line of battle instead of in columns of regiments, I believe they would have taken that crest. There was a great deal of work which should have been done along our old line nearest to the crater and to the south of the line of the gallery, so that troops could have readily marched forward at least in two regiments abreast. That being done, and those troops advanced as I described, I believe they would have taken that crest readily, and I believe that then, if the supports had been thrown in promptly, that crest would have been held, and success would have crowned the operation. After it was clear that the thing had failed, I think that prompt orders should have been given to withdraw, in one rapid movement, all the troops left in the crater, to bring them out in one body rapidly back to their lines.

Major General G. K. WARREN, United States volunteers, being duly sworn, says :

By the judge advocate :

Question. General, were you present at the assault on the 30th July, the day the mine was sprung, near this place ; and if so, in what capacity ?

Answer. I was there in command of the fifth corps.

Question. Will you please to state what, in your opinion, were some of the chief causes of that failure ?

Answer. To mention them all at once, I never saw sufficient good reasons why it should succeed. I never had confidence in its success. The position was taken in reverse by batteries, and we must, as a matter of course, have expected a heavy fire of artillery when we gained the crest, though we did not get near enough to develop what that would be. I never should have planned it, I think.

Question. As it was planned, had you an opportunity of seeing whether the plan was carried out in the best manner—the plan having been adopted ?

Answer. I can mention some faults. There was great defect, I think, in the preparation for the movement of the assaulting column. I judge so from the way the column moved, as I did not visit the exact point. And second, I think the first force, instead of moving straight on the hill, should have cleared the intrenchments right and left of the crater, so as not to have exposed the advancing column to a flank fire. I tried to make a similar assault there on the 18th of June, and that very same battery that operated on the left flank of Burnside's force that day was in operation on the previous occasion, and stopped all my efforts.

Question. Could you mention that battery particularly by showing it on the map, or designating it in some way ?

Answer. It is the first battery on the south side of the mine.

Question. Was our artillery fire effective on that occasion ?

Answer. As much so as it could be. I heard Colonel Abbot complain that a group of trees in front of one of his large batteries was left standing, and it was his desire to have it cleared away.

Question. Did he say whose business it was to clear it away ? Did he find fault with any one ? In whose front was it ?

Answer. In General Burnside's front. I remember he said General Burnside had told him that he was afraid clearing it away might disclose his intention ; but I do not think that he said whose fault it was that it was not done, or whether it was a fault, except in interfering with his battery.

By the court :

Question. Aside from any general principle with reference to the matter upon which you predicated the chances of success, do you think that after the mine exploded there really was a chance of success ?

Answer. There are so many ifs in it. If we could have carried that first line of rifle-pits, and then maintained ourselves after we got to the crest, we would have had success ; but I do not believe any troops will stand on an open plain with artillery, covered by redoubts, playing upon them ; and I think that is what the enemy had then, or ought to have had, if they did not. If they have been there all this time without that preparation, they are much more unprepared than I think they are.

Question. Did they open much artillery fire for the first fifteen minutes or half-hour after the explosion ?

Answer. I should say not a great deal, not where I was ; only a very little. There was no particular danger in my vicinity for a group of horsemen standing right out in plain sight, as we did all the time. Their batteries were mainly

placed for enfilading any line attacking, and probably reserved their fire until that line approached.

Question. Aside from that operation of the 9th corps, if the 5th corps, supported by another, could have been thrown round on the enemy's right, occupying those two railroads and turning his right, what was the chance of success in that direction?

Answer. It would be impossible for me to say. I do not know what the nature of their defences were in that direction. I believe, from what I have heard, that the very brigade which repulsed General Burnside was located there in the morning, and my corps at that time had no force in reserve, except General Ayres's division and a brigade of General Crawford's and a brigade of General Cutler's.

Question. Was there any force of the enemy there strong enough to resist the number of troops we had disposable, had they been put in properly after the first assault had failed?

Answer. I can answer that question and cover a little more. When we attacked, in the first operation on Petersburg, we had more force than on this occasion, and the enemy had about the same, I think; and I don't believe that the blowing up of the mine made up for the difference in the increased strength of the earthworks, as they were on the 18th of June and the 30th of July; and if the operation of the 18th of June decided anything, I think it decided that the operation of the 30th of July would have met with the same result.

Question. Did you feel the want of any person on the field, who could see for himself and give commands on the spot? Had that any effect upon the result? Or do you think that any person ought to have been present who should have had command of the storming party and all the troops ready to take part in the operation?

Answer. I think some one should have been present to have directed my command as well as General Burnside's and General Ord's—some one person; but whether that would have affected the result or not I am not prepared to say.

Question. Did you experience any uncertainties and doubts for the want of such a person's presence there?

Answer. Yes.

Question. Were there moments when such a person's presence was necessary in order to decide at once what should be done?

Answer. I think it was necessary that some one should have been there. If you have my official report it will show you that I was in doubt whether to move to the left or move to the right to help General Burnside, and that I had to await the transmission of despatches and corresponding answers—my report shows how much; but I do not know that that would have affected the main result at all. My report is a complete answer to your question. Sometimes, in these badly planned or badly inaugurated assaults, the longer and better they are pressed the worse we are off—great losses being sustained after the time and chance of success are gone.

The court adjourned, to meet at 10 o'clock a. m. on 30th July.

EIGHTH DAY.

HEADQUARTERS SECOND CORPS,

Jones House, August 30, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

The proceedings of the 7th day were read and approved.

By General Meade :

Question. What did you mean by saying "some one should have been present to have directed my command together with the commands of Generals Ord and Burnside"? Were you not aware that the commanding general of the army of the Potomac was in the field, and in telegraphic communication with yourself and the other officers alluded to?

Answer. I saw from my position, which was, I suppose, about four hundred yards from General Burnside's, as well as could be seen in the morning in the smoke, that the assault was not going on very rapidly, and that no effort had been made to do what I thought was the first essential—to take that battery on the left of the mine. I then went to General Burnside's, which was as close to the scene of operations as a man could be and see well. There I found Generals Burnside and Ord engaged in conversation. I suggested to General Burnside that that battery should be taken at once; he asked me to go down the line and take a look at it from another point, and I did so. Upon returning, I saw I was confirmed in my first opinion, and he asked me if my troops could not take it. At that time all the approaches leading down to where the mine was were filled with his troops, still slowly moving down, and there was no chance for me to get at the battery, except to go over the open field. I, however, determined to put in General Ayres's division at once, and try to take it, and went back for that purpose, when I got a despatch from General Meade, the exact language of which I do not remember, to the effect that I would await information from some operations which had been directed, or that were then going on on the left; and then it was that I wrote one of the despatches in which I said that I thought some one should be there to direct whether I should attempt to take that battery or go with my division round to the left, as General Crawford reported that he was unable to do anything, with what force he had there, on the plank road. I will qualify what I said about the loss of time. I lost considerable time talking to General Burnside; I lost some time in going to see the battery with him; I lost some time in writing despatches and awaiting answers; and, in an operation of that kind, every moment was of vital importance, for before I got the order to go in and take the battery, the enemy had driven nearly all of General Burnside's line out of the intrenchments he had taken.

If General Burnside had given me any orders, as I was there for the purpose of supporting him, I would have obeyed them; but he seemed to act as if what we did was to be done after consultation, and, therefore, I thought that some one should have been right there to have directed at once, without a moment's loss of time, what should be done and what should not.

Those despatches show the extent of the loss of time. But, as I said in my testimony yesterday, I do not know that it affected the result at all. But, in reply to the direct question, if I thought there should have been some one there to give promptly positive orders what to do, I gave my first answer.

Question. How much time was occupied in these consultations, reconnoissances, and other matters referred to by you? and would not the commanding general, had he been at the point referred to by you, have been compelled to consume the same time?

Answer. I do not remember how much time was lost, and cannot tell exactly, unless I can have my official report, or a copy of it, or some records of that kind to refer to. But it was a point of observation at which I should have consulted with nobody.

Everything was plainly to be seen.

Different persons might look at it differently, but it was a position where any one man could see the whole. In my opinion, the most important time was lost before I went to that point.

Question. Why did you consume the time which you acknowledge to have been lost, and why did you not at once telegraph the commanding general about what you saw and what you thought could or should be done?

Answer. The time that I speak of was consumed by General Burnside. In my instructions I was directed to support him; and I informed him where my headquarters were, as stated, not far from his. I waited there for his directions. I thought that my being with him, under orders to support him, the time lost was lost by him and not by me. I did keep the commanding general as promptly informed of everything as I possibly could. Even if I had chosen to have acted independently, according to my own discretion, subject to the approval of the commanding general, all the approaches to the point were occupied by General Burnside's troops. I could not have moved mine without getting them mixed up with his.

By the court:

Question. Did you not mean, in your previous answers, that it was your belief that if the commanding general had been on that field there would have been a pressure brought to bear to push those troops of the 9th corps that occupied those trenches forward faster than they went?

Answer. I think that the controlling power should have been there, and nowhere else, so that there should have been no reference to anywhere else.

Question. When you replied to the last question put to you yesterday, did you consider that the commander of the army of the Potomac should have been present in person, or that some one should have been invested with the command of all the troops engaged in the assault as supports, reserves, &c., if said commander was not there?

Answer. I meant that some one person, having general command, should have been there to have seen and directed all at once.

Lieutenant General U. S. GRANT, United States army, being sworn and examined by the judge advocate, says:

Question. Will you please to state what, in your judgment, caused the failure of the attack on the enemy's lines on the 30th of July?

Answer. It seemed to me that it was perfectly practicable for the men, if they had been properly led, to have gone straight through the breach which was caused by the explosion of the mine, and to have gone to the top of Cemetery hill. It looked to me, from what I could see and hear, that it was perfectly practicable to have taken the men through; but whether it was because the men themselves would not go, or whether it was because they were not led, I was not far enough to the front to be qualified to say.

Question. What orders which you issued were not executed, if any?

Answer. I could send you copies of all the despatches that I wrote. The orders for the assault were issued by General Meade, in obedience to general instructions from me. I saw the detailed order of General Meade before the mine was exploded, and I thought that the execution of that order was practicable. That order, I presume, you have before you. My order was to General Meade, and then General Meade made his order from what I directed him to do, and sent me a copy of it; and I thought it was all that could be required. I recollect that, failing on the north bank of the river to surprise the enemy, as we expected or hoped to do, but instead of that drew a large part of his force to the north side, I telegraphed to General Meade that we would now take advantage of the absence of that force of the enemy to explode the mine and make an assault on Petersburg.

By the court:

Question. From your information, how many of the enemy were in Petersburg at the time of this assault?

Answer. My information was, that three divisions were left in Petersburg, with one brigade absent from those divisions—Johnson's. From the best evidence, none of the enemy's troops crossed the James river until 2 o'clock of the 30th of July, on their way back. Then they had fully sixteen miles to travel to get back, with, however, the advantage of a railroad near them to carry many of the men. The distance I guess at, when I say sixteen miles.

Lieutenant Colonel C. B. COMSTOCK, aide-de-camp, being duly sworn and examined by the judge advocate, says :

Question. Were you at or near the scene of the assault on the 30th of July; by whose orders, and in what capacity?

Answer. I was at General Burnside's headquarters, as aide-de-camp to Lieutenant General Grant, and afterward at General Warren's headquarters by General Grant's orders.

Question. Did you see General Burnside in person; and had you conversation with him?

Answer. I had some conversation with him.

Question. Relate the conversation in brief.

Answer. I went from General Burnside's headquarters, to the position he had in the front, to ascertain how things stood; I suppose the time was about an hour after the explosion of the mine. He told me that his troops were forming then for an assault to carry the crest of the hill. That was the only important point in the conversation.

Question. Did he give you any information to communicate to General Grant?

Answer. I do not recollect that he did.

Question. Had you an opportunity of forming an opinion as to the cause or causes of the failure on that day?

Answer. I had not, from anything that I saw myself.

By the court:

Question. Were you so situated that you could see this assault?

Answer. I could not until I went to General Warren's headquarters, which was about 7 o'clock. I could not see the details.

Question. Had you made such an examination prior to the assault that would enable you to give a professional opinion as to the chances of success in attempting to take Cemetery hill by assault, considering the explosion of the mine as the basis of the assault.

Answer. I had.

Question. I wish you would state to the court what the chances of success were, using this mine as a means of inaugurating the assault.

Answer. I thought it entirely impracticable when the mine was made, if the enemy's line should be held in full force. This opinion was formed a week or ten days prior to the assault. Afterwards, with the knowledge I had of the movement of the enemy's troops from the south to the north side of the river, I thought an assault was entirely practicable.

Question. What do you suppose would have been the best plan for the assaulting troops to have followed after having reached Cemetery hill—made a lodgement on and fortified that place, or proceeded immediately into the town of Petersburg?

Answer. I suppose the first step should have been to have made a lodgement on Cemetery hill, and then to have pushed up troops to hold it at all hazards. The disposition of the troops would depend upon the nature of the ground.

Question. From your knowledge of the nature of the intrenchments, our own and the enemy's, do you think that immediately after the explosion of the mine, if proper working parties had been arranged, there would have been any diffi-

culty in removing sufficient obstructions to have enabled our troops to have moved against those intrenchments in line of battle?

Answer. I do not think there would have been any difficulty.

Major General E. O. C. ORD, United States Volunteers, being duly sworn and examined by the judge advocate, says:

Question. Please state what was your command at the assault on the 30th of July.

Answer. My command was composed of two divisions to aid in the assault, one of which belonged to the 10th corps, and was under General Turner, and the other to the 18th corps, under General Ames. The divisions numbered, General Ames's about 3,500 and General Turner's 4,000 available muskets, or probably a little less.

Question. What were your troops ordered to do?

Answer. My troops were ordered to a position in the rear of General Burnside's corps, with a view to supporting it. The positions were selected by General Burnside.

Question. Did your troops experience any interference from the 9th corps moving into position on that occasion?

Answer. After General Burnside's troops had made the assault and pushed forward, probably about an hour or a little more after the explosion of the mine, he said to me, "Now you can move your troops forward." I sent orders immediately to the leading division to move forward rapidly, according to the programme, following the division that was in front of it, which was the rear division of General Burnside's corps. In the course of twenty minutes after the order was sent out by a staff officer, General Turner reported to me that he found the way blocked, that the approach to the place of debouche was occupied by the divisions in front, and that he had found himself in front of General Potter's troops.

This was the report made by him. General Potter's troops, according to the programme, were to precede his.

Question. Were any arrangements made for the passage of troops through the abatis, and over the parapets, to go to the front on that day?

Answer. When I went to the front I found the troops debouching by a single opening. The parapet had been thrown down, and the abatis had been removed, and the troops were moved out by that opening.

Question. Please state the dimensions of that opening; would it admit of the passage of troops in column, or line, or how?

Answer. I cannot give the exact dimensions, because my attention was occupied principally in watching what was going on in front of this place; but my impression is that the opening was large enough for a column of a company front to go out over pretty rough ground. I do not know whether there was more than one opening; I only saw that one.

Question. That was the one your troops passed through?

Answer. No, my troops did not all pass through that way; I directed a portion of my troops to go over the parapet.

Question. Did you direct them to go over the parapet because, in your judgment, the opening was inadequate?

Answer. I gave those directions because the ground in front of this place of exit was occupied by other troops, and there was no room after they got out for them to be of service without moving for a considerable distance by the flank, to the right and left.

Question. How were the troops that debouched to the assault formed to advance?

Answer. When I went to the front, I saw white troops moving out by the

flank into the crater and the trenches near; I say by the flank, but I will explain that they passed along by twos and threes, and sometimes fours, along this space, which was pretty well swept by the fire of the enemy—the space between our trenches and the crater formed by the explosion of the mine. These white troops were followed afterwards by some colored troops, who also moved out, as it were, by flank, though the appearance of moving by flank may have been caused by the columns being somewhat disordered and hesitating in the move, so that a few moving forward first, and others following them, would diminish the width of a column, and give the troops the appearance of moving by flank.

Question. In your opinion, was this movement by flank judicious, or was it unavoidable?

Answer. I would not suppose it was a judicious move, under the circumstances, if it could have been avoided; I rather think, if intended to be a movement with a front of one or more companies, then the kind of formation I saw was caused by the hesitation of the troops in the rear, and the natural disposition of those men who are more or less timid in following those in front to string themselves out in almost single file.

Question. What, in your opinion, were some of the causes of failure on that occasion?

Answer. I think the first cause was that the troops were not well disciplined; they probably had not had time to become soldiers. The next cause may have been that they passed out of the trenches by one place of exit, and through the covered way to a considerable extent, which necessarily impeded the progress of troops going out, especially as troops began coming in by the same covered way.

Question. Were the obstacles met by our troops, in your opinion, formidable?

Answer. I did not go to the front until difficulties were reported in the way of carrying out the order received from General Meade, to move my division out to the right, independent of the troops in my front, and endeavor to reach the crest of the hill; it was reported by the division commanders that the nature of the ground was such that they could not get out that way. I went down to inspect the ground myself, and I derived the impression that there were difficulties in the way of getting out from the position occupied by my men at that time, except in one place. They were in the long covered way—the way leading to the angle from which the troops debouched; the ground was swampy, covered with more or less undergrowth and trees, and appeared to run obliquely in front of the enemy's trenches. If the troops should get into that swamp and undergrowth it would have been difficult to have kept them in order, and the enemy would have had them at a greater disadvantage, raking them if they occupied the trenches. The covered way was a pretty deep one, and I supposed from the fact of its being there, leading to the place of exit, it was swept by a very heavy fire from the enemy's batteries. It was reported that the stream running through the marsh was bridged in one place by a narrow bridge where we crossed it, and that it was a difficult place for troops to pass over; when I got there I saw that it was very muddy, that delays would be occasioned, and that it was a difficult place to attempt to take the enemy's intrenchments, and we would have got on the ground just under the enemy's works and probably been exposed to a very severe fire.

Question. Did any troops, to your knowledge, misbehave or disobey orders?

Answer. None that I know of, except after, when an assault was made by some colored troops, followed by a brigade of the 10th corps, which assault was made about 8 o'clock, while I was in the front line of our trenches and within less than one hundred yards of the crater, and what I would call the movement of assault; the men were repulsed by a very heavy concentrated fire which

enveloped that point of exit—the enemy having massed forces on the right and front, and some fire coming from the left.

Question. In your opinion, had the first troops that went forward not hesitated nor halted in the crater, could they not have got to the desirable point—that is, Cemetery hill?

Answer. I know nothing about their halting, or the facilities that they had for getting forward, except through what I heard from others, I not having been present at that time.

Question. How was our artillery firing, as far as you observed—effective or otherwise?

Answer. The artillery fired very rapidly and for a long time; and, judging from the reports in the enemy's newspapers which I have seen since, we must have done considerable damage by our artillery upon their columns moving across to the place of attack.

Question. Were the obstructions north and south of the crater removed sufficiently to admit the passage of troops in line of battle—say brigade front?

Answer. I did not see that any obstructions made by the enemy's trenches had been removed when I was there, except what had been removed by the explosion of the mine at the crater. Their ditch still remained, and I counted the regimental flags of our troops in my front occupying the trench. I do not know whether there was a strong abatis before the attack, so that I refer only to the ditch and the parapet.

By the court:

Question. Do you think the assault would have been successful there, had the best dispositions been made that you are conversant with?

Answer. From what I learned afterwards of the behavior of the troops after the explosion, when the enemy was most alarmed, I think that the assault, if it had been made with no more vigor, would have failed, no matter what the disposition. If the troops had behaved properly elsewhere, I think the probability of success would have been increased by having more openings, a simultaneous assault, and increased material; but if the troops would have behaved as improperly as they are reported to have done in front, not going forward when ordered, I think the assault would have failed, no matter what the disposition.

Question. In your opinion, was there any necessity for an officer of rank being present who shon'd have had a more general command than the commander of the troops making the assault and the commanders of the supports and reserves? should there have been an officer present to have combined the whole command nearer than the commander of the army, who was only in telegraphic communication with the different commanders of troops on the field? should there have been one single person there, invested with authority to direct the whole operation? and would the result have been different, if such had been the case?

Answer. The only commands referred to as present there—the assaulting corps and the reserves—were under General Burnside and myself; and upon reporting to General Burnside, I accompanied him to the trenches, and told him I would obey any instructions he gave me; so that the whole of the operations were under his orders, until the orders came from higher authority to make the change referred to, and to discontinue the assault. General Burnside being the senior officer, I considered that he had a right to give me orders. He directed me to place my troops in the rear until after his troops should have made the assault, and until he learned when they would be necessary, and where, which I did. General Burnside was to give me word when to move my troops, and where to move them. I told him I considered myself bound to obey any instructions that he might give me, and that any instructions that he would give would be obeyed with alacrity; so that, so far as concerns the movements directed by him, I do not think the presence of any other officer in those two corps would have made any change in moving forward.

Question. Could your troops, when they were called into action, have advanced to the front over the enemy's parapet, and have gotten through in line of battle in any front greater than that of two regiments, at the time you were sent in, on each side of the crater?

Answer. I think it probable that my troops might have gotten in on the left of the crater at that time, if they had advanced through the opening by fronts of regiments, or even companies, gotten into the enemy's trenches; but my answer must be understood to convey only a knowledge of what I saw. I do not know what force the enemy had on the left. I only know that the resistance on the right was very great, and they appeared to have a severe fire upon the troops on the right of where we advanced to the crater. My troops were directed to support General Burnside on the right.

Question. Were you present when the mine exploded? Do you consider that the troops might have advanced to the top of Cemetery hill on that ridge, had they been properly led forward, or the troops behaved properly?

Answer. I do not consider I was present when the mine exploded.

By General Meade:

Question. Where was your general position on the field during the operation of the morning?

Answer. When the mine exploded, and probably for an hour and a half or two hours afterwards, I was with General Burnside in the trenches in rear of one of the batteries about one-third or half a mile from the point of assault; after that for half an hour I was up to the front as far as I could get without going into the crater, or outside our line of intrenchments as far as the head of my advanced division was. I then returned, and General Burnside and myself occupied the same place in the rear of this battery for probably an hour, except that I rode to the rear where General Meade was, and passed around a little, trying to rally some troops who were going from the front. This took me till between 9 and 10 o'clock, when General Burnside and myself both rode to the rear to learn something about an order that was issued in regard to our future movements.

Question. Could anything be seen from this point with sufficient distinctness to have enabled the commanding general to give orders other than he did from the point occupied by him?

Answer. Immediately after the explosion, the fire from both our batteries and the enemy's came very heavily, and the cloud of smoke prevented us from seeing anything that was going on there. We were ignorant of the condition of things except from the information staff officers brought us, or from the nature of the firing we heard, up to the time that I informed myself by going to the front.

Question. Did you hear any staff officer report to General Burnside that the troops could not be got to advance from the crater? If so, how many officers so reported, and do you know their names?

Answer. The first two or three reports that were brought to General Burnside, were brought by officers whose names I do not know, and not until some considerable time had expired after the explosion; and although I did not hear the reports distinctly enough to repeat them, they were not satisfactory, and indicated that the troops could not be moved readily forward.

Question. Did you not report to the commanding general that the troops were overcrowded in the crater, and the enemy's works adjacent, and that in your judgment there was no probability of the crest of Cemetery hill being carried—this somewhere between 9 and 10 a. m., at the headquarters of the commanding general in the field?

Answer. I did. I would say, in addition to my answer, that General Burnside and myself were present at the time, and the question was, whether we

could carry it at that time; and my answer intended to convey whether *we*—General Burnside and myself, with our forces—could have done so, had they let us; and after the troops were disorganized and driven back, those who made the attack later and those who made the attack earlier were packed in the trenches adjacent, that, under the circumstances, we could not carry it with all our troops at that point of attack.

Question. Did General Burnside, about 10 a. m., when at his commanding general's headquarters on the field, say that he could maintain his lodgement in the crater, and that he could take Cemetery hill before night, if so permitted?

Answer. General Burnside disagreed with me, when I said I did not think we could take it. I supposed he meant that he could take it with the force he had, consisting of his own corps and my reserves, though he said something about it was time then for the 5th corps to move up. The remark was made by General Burnside, with a view to persisting in the attack which he commenced, and it had been my opinion, ever since I was near enough to see what was going on in the crater that the sooner we withdrew our troops, when we got into such a bad position, the better, and any persistence in the attack at that point I looked upon as very improper.

Question. Was it not understood at this time that offensive operations should cease, but that the crater should be held till the troops could be securely withdrawn, and that this would probably be till night?

Answer. I think such was General Burnside's understanding, and I know he received such orders. My troops were all inside the intrenchments, except those who had run into the enemy's trenches to avoid the tremendous fire which they met when they went out.

By General Warren :

Question. Do you remember seeing General Warren at the battery at General Burnside's station?

Answer. I do.

Question. Was not the whole field at that time sufficiently clear from smoke to be visible, and had been so for some time previously at that point?

Answer. I do not know whether it was after my return from the vicinity of the crater or before that I saw General Warren. My impression is that each time I looked from the parapet before I left the trenches—which was two or three times that I rose to look to the front—the smoke obscured the view, so that I, at least, could form no definite idea of what was going on at the front. After the firing from the batteries on our side had ceased, which was probably an hour from the time of the assault, the atmosphere was clearer; but even then I could make out really little of what was going on in front, from the distance, the peculiar position of the point of attack, and from the fact, too, that I do not see very well, because I am near-sighted.

Brigadier General R. B. POTTER, United States volunteers, being sworn and examined by judge advocate, says :

Question. Were you in a position to see the operations of the assault before Petersburg, on the 30th of July, and in what capacity?

Answer. I was commanding the 2d division 9th army corps.

Question. Do you regard it as a failure or otherwise?

Answer. I regard it as a failure.

Question. To what cause or causes do you attribute this?

Answer. Firstly, to the failure of the troops who had the advance on that day to carry out the orders to advance through the enemy's line and seize the hill. Secondly, that when it was evident that this part of the plan had failed no attempt was made at a diversion, at any other part of the line, to en-

able the troops, which were thrown into confusion at this point, to be re-formed. I would further state that I do not think the preliminary arrangements were very perfect.

Question. What preparations were made, or what orders were given for the same, to pass troops through the abatis and over the parapet in front of the 9th corps? Did you receive any orders yourself?

Answer. I received no orders whatever in relation to that matter, except what are contained in the general order from the headquarters of the army of the Potomac. I was furnished a copy of that order, but no other order.

Question. But what preparations were made, or what orders were given for the same, to pass troops through the abatis and over the parapet in front of the 9th corps?

Answer. The general order of General Burnside—I suppose it might be called the order of attack—was the only order given in writing. Verbal instructions were given to have the pioneers of the different regiments, and a sort of pioneer regiment that we call the engineer regiment, in each division, prepared with their tools, &c., to prepare the breastworks for the passage of field batteries, in case we were successful in moving forward. My regiment was immediately in the neighborhood of the breastwork, ready to carry out these instructions, and my pioneers were also prepared. I had orders not to disturb anything immediately in the vicinity of the mine, so as not to attract the attention of the enemy to that point. I was told to withdraw everything from that part of the line for a space of two or three hundred yards, except a thin line of skirmishers, and not to attract the enemy's attention there, if I could help it.

Question. How were the 9th corps troops formed for the assault—your own division for instance?

Answer. My own division was to have been formed left in front, to move forward by the flank, so that when my troops had passed the line of the enemy's intrenchments, by fronting their front would be to the right, my division being intended to cover the right of the advance. One brigade of my division was massed between the railroad and the advance line of works on the right-hand side of my covered way, and south of the mine. I had orders not to allow any troops on the left of the covered way. The other brigade was partially in the trenches, and about to be relieved by some of the troops of the 18th corps. Two or three regiments, which I was ordered not to put in the assault, were not in the trenches.

Question. What time elapsed from the springing of the mine till the forward movement of the assaulting columns?

Answer. I do not know, sir; I did not see the movement of the first division. The first of my regiments commenced to move, I should think, about eight or ten minutes after the mine exploded. My division was to move third in order, but I took the liberty of altering the programme a little. After I received the order of Major General Burnside—I received the order about nine o'clock at night—after thinking the matter over, it occurred to me that it would be a very long time before my division would have an opportunity to get forward, as the divisions of Generals Ledlie and Wilcox were to precede me. I therefore commanded General Griffin, who had the lead in my division, to deploy a line of skirmishers to the right of this crater, and in case the assault seemed to be successful and General Ledlie moved forward, he should advance his skirmishers to the right, and if he did not find so much serious opposition as to detain him there, he should push his troops forward to the right, and move forward nearly parallel with General Ledlie. I gave him these orders about twelve o'clock at night, and I do not think that I communicated to General Burnside that I had made this change. Therefore my troops commenced moving as soon as General Griffin found that General Ledlie's column had started

This leading division commenced moving and passed into the right of the crater and turned down to the right.

Question. Did the troops halt in the crater?

Answer. Yes, sir.

Question. Why?

Answer. No reason at all that I know of.

Question. What was the nature of the obstructions in the enemy's line, formidable or otherwise?

Answer. To the right of the crater there was an ordinary line of rifle-pits with a sort of *chevaux-de frise* in front of it, made by pointed stakes being driven into the ground. Immediately in rear of this, and to the right of it, there were two covered ways. One seemed to be a covered way, and one perhaps a place dug to carry something out of the fort. There were transverse lines of rifle-pits, and some coverings thrown up by the men to protect themselves—one running in these angles between the advance line and this covered way, which runs off towards Petersburg, and another running on the bank of the ravine which runs up through the enemy's line to the right of the mine, about the line I was ordered to take.

Question. What was the degree of artillery firing on that point—the point of assault?

Answer. Immediately after the assault, very light; afterwards the fire was very severe indeed—as severe as I ever saw.

Question. What time elapsed, as near as you can tell, from the time of the assault till the time this severe fire commenced?

Answer. I should think fully half an hour.

Question. Was the ground around the crater commanded by the ground held by the enemy?

Answer. Yes, sir; that is, immediately in rear of the enemy's line which we had pierced the ground commanded it, and the ground to the right on the other side of the ravine commanded it. In speaking of the right, I mean our right. The ground to the left I did not notice so well, because I had no business there.

Question. For what distance on each side of the crater were the enemy's works abandoned after the explosion of the mine?

Answer. To the right of the crater the front line was abandoned for a space of two hundred and fifty or three hundred yards I should think. That is, the enemy's troops rushed out of this line back to these covered ways, and so forth. From the hasty glance I gave to the left, there did not seem to be anybody within three hundred yards. Perhaps it would be better to say that the line was only partially abandoned; they did not all go—some went and some did not.

Question. Could the troops have proceeded to the crest immediately after reaching the crater?

Answer. I do not know any reasons why they could not.

Question. Did any troops that you know of advance from the crater to the crest?

Answer. Some of my troops advanced from the right of the crater towards the crest; I suppose they went upwards of two hundred yards, and they were driven back.

Question. Why, do you suppose, were they driven back?

Answer. At that time they were driven back by the fire. They were too weak to advance further.

Question. By the fire of artillery or of infantry?

Answer. Both.

Question. At what hour was that?

Answer. That must have been about half or three-quarters of an hour after the mine exploded.

Question. Do you think that if your men had been adequately supported,

they could have gone forward to the crest notwithstanding the obstacles that presented themselves, firing, and so forth, at that hour ?

Answer. I think that if I had had my whole division together at that time, if the ground had been such that I could have had my whole division together and made that charge, I could have gone to the crest.

Question. When these troops fell back where did they go ?

Answer. They fell back partially into this covered way leading from the fort to the right, and a few were driven into the crater of the mine.

Question. How long was it after they got in before they were ordered to retire; how long were you in that place, or wherever they were ?

Answer. Until the general order came to withdraw the troops.

Question. How long would you estimate that time to be ?

Answer. It must have been five or six hours. It seems to me we did not get that order till about 11 o'clock. General Burnside sent for me, I should think, about 10 o'clock in the morning, and stated that he had received an order to withdraw, and asked me if I thought we could hold the position. I told him I thought we could hold the position, but unless something was going to be done there was no use in it. He said it was an important point, or something of that sort, and I asked him if I would make arrangements to withdraw, and he told me no; that he was going to see General Meade, and that I should wait until he should have consulted with him. Half or three-quarters of an hour afterwards I received a copy of a telegram to General White, who was acting as his chief of staff, with an indorsement on the back of the despatch to the effect that it should be submitted to the officers in the crater, or something to that effect, for their opinion as to how they should withdraw. Subsequently I started to go into the crater to consult with them, and I received an order from an aide-de-camp of General Burnside to report in person at his headquarters.

Question. Was the time a fit one to withdraw, in your opinion ?

Answer. The troops were not withdrawn at all. They were driven out by the enemy.

Question. When did the chief loss of men occur ?

Answer. The chief loss in my division occurred between half past six and ten o'clock in the morning. The heaviest loss was at the time that some of the troops of the 4th division (the colored division) met with a check and were repulsed.

Question. Was it in the act of retiring from the crater ?

Answer. More than half the prisoners I lost were lost in the crater. I should explain that I had very few men in the crater; that seeing how it was overcrowded, and that one or two regiments that attempted to pass through were lost among the other troops, I endeavored to get my troops out of there; but when some of the other troops gave way, and the operation of General Ferrero's troops was unsuccessful and they gave way, I had some stragglers forced into the crater. I suppose I had not more than two hundred men in there. My troops were holding the line to the right of that mostly.

Question. By whom was this removal of the troops conducted ?

Answer. It was not conducted at all, sir. The circumstances were these: After we had received this order, General Burnside directed me to report at his headquarters. I went to his headquarters, met there the other division commanders, and we consulted upon the best plan which should be adopted to withdraw the troops. I had previously sent out orders to connect my right with the crater by an intrenchment, if possible. While we were returning from this consultation an assault was made upon the crater, and the enemy recovered possession of it. Then all the troops were forced back to our line except two regiments that I had sent beyond the ravine to silence a battery, and these I withdrew about four o'clock in the afternoon.

Question. Do you know whether any troops misbehaved or disobeyed orders in any way, or at any time, during the action?

Answer. I do not know that I can answer that exactly. I know by the reports of my staff officers, and so forth. But I saw troops lying there when they had been ordered to go forward. Immediately after the mine exploded, probably within ten minutes, Colonel Pleasants, who had charge of the explosion, and whose regiment, having built the mine, being relieved from duty on that day, except as a sort of provost guard with orders from the 9th army corps, had volunteered as an aid on my staff, and as soon as the mine was exploded he rushed forward into the crater, and the troops were moving up; and he reported to me that the troops could not be made to move forward; that was, the troops of the 1st division. He showed me his hand, which was blistered in driving them up. It was Marshall's brigade of Ledlie's division.

By the court:

Question. What tools were the engineer regiments supplied with?

Answer. Axes, spades, and picks. The engineer regiment, I think, was supplied particularly with axes to cut down the abatis.

Question. Did they move forward?

Answer. Yes, sir.

Question. Did they destroy the abatis?

Answer. The *chevaux-de-frise* on the enemy's lines for two or three hundred yards was broken down.

Question. Was there any difficulty in passing a brigade or regimental front over our intrenchments and on either side of that crater to the front?

Answer. It might have been done on the left, but not on the right.

Question. What was the difficulty on the right?

Answer. The difficulty on the right was, that where you would have to form your troops you would have to pass through a wooded ravine and swamp. A heavy regiment which charged through in regimental front, I think, got very badly broken up. They would have succeeded better further to the right.

Question. Where did you stay during the attack?

Answer. Most of the time I stayed on the hill on this side of the railroad—a point where you can see the ground.

Question. Did all of your troops go into action?

Answer. My troops all went into action except my engineer regiment, which had just moved up to the front.

Question. Did they all get as far as the crater?

Answer. All except one regiment got beyond the crater.

Question. Did you ever go to the crater?

Answer. I never went to the crater myself. I was within about eighty yards of it—just off to the right of it.

Question. At the time your skirmish line was ordered up the hill, did any individual members of your division get to the top of the crest?

Answer. I do not think there did. It was reported to me that some did, but having investigated it since, I am satisfied that they did not.

The court adjourned to meet at ten o'clock on the 31st of July.

NINTH DAY.

HEADQUARTERS SECOND CORPS,

August 31, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayres and Miles; and Colonel Schriver, judge advocae.

The proceedings of the eighth day were read and approved.

Brigadier General EDWARD FERRERO, United States volunteers, being duly sworn, to questions by judge advocate says :

Question. Were you at the assault on the 30th of July, and what was your command ?

Answer. I was ; commanding the 4th division of the 9th army corps, (colored troops.)

Question. What was their formation for the attack ?

Answer. There was no formation, further than moving down in rear of the third division, as directed in the orders, by the flank in the covered way.

Question. Was this the most judicious ?

Answer. It was the only formation that could be adopted under the circumstances.

Question. Please to state the circumstances

Answer. There being no position to mass the troops.

Question. Why was there no position ?

Answer. On account of there being three other divisions in advance of mine, which would occupy all the available ground where my troops could have been formed.

Question. What orders had you to prepare the parapet for the debouch of troops ?

Answer. I had no orders whatever.

Question. State some of the causes of the failure, if you regard it so.

Answer. I do regard it as a failure.

Question. State some of the causes, briefly.

Answer. The failure of the 1st division to go forward immediately after the explosion.

Question. Do you attribute their halting and not going forward to misbehavior on their part ?

Answer. Not being present there, that I could not say. In my opinion, there is no reason that I know of why they should not have gone forward.

Question. State the reasons why you arrived at that conclusion.

Answer. I would state that there could have been no obstructions whatever at that time, from the fact that the crater was crowded with troops, in and about it, when my division went through and passed over the obstacles, not only the obstacles occasioned by the explosion, but also the mass of troops in the crater. They went through and passed beyond those troops at a time when there was heavy firing ; whereas those troops that had gone forward on the lead could have gone forward with a very slight loss, in my opinion. I would state that, in my opinion, the order of battle for the movements of troops on that day was extremely faulty. If I understand it right, the object to be attained was to gain the crest on Cemetery hill ; and to take advantage of the momentary paralyzation of the troops in and about the crater, caused by the explosion of the mine, it was necessary that the troops that made the assault should move with the utmost rapidity to gain that crest. I contend that the point of the assault was not properly selected to carry out that object ; that the obstructions which the explosion of the mine would naturally create would disorganize the troops and prevent them moving forward with the rapidity that was desired. Furthermore, I would state that the manner in which the troops went in would not lead them to attain the object that was desired. The two divisions that followed the leading division were to have protected the flanks of the same. Now, how could they protect the flank when the leading division, the head of that column, would hardly have reached the crest before the 2d division would have reached the crater, subjecting the 1st division to flank fires, and to be taken in reverse ? And even had the 3d division, which had the second position in column, have gotten through, it would have taken a long time before the 2d division, which

was the third in column, could have reached its proper point to protect the right flank of the 1st division. I mean to convey the idea, that either other movements should have been made on the flank of the leading division, or that division should have been deployed to the right and left, engaging the enemy on the flank, so as to give the assaulting column an opportunity to advance rapidly to the crest of the hill.

By the court :

Question. How long was it after the explosion of the mine before the assaulting column moved forward ?

Answer. I was not with the leading division; therefore, I cannot give you the exact time, but it was very shortly after.

By the judge advocate :

Question. State to the court how the 4th division, (colored troops,) your own command, conducted themselves on the occasion.

Answer. I would state that the troops went in in the most gallant manner ; that they went in without hesitation, moved right straight forward, passed through the crater that was filled with troops, and all but one regiment of my division passed beyond the crater; the leading brigade engaged the enemy at a short distance in rear of the crater, where they captured some two hundred odd prisoners and a stand of colors, and recaptured a stand of colors belonging to a white regiment of our corps. Here, after they had taken those prisoners, the troops became somewhat disorganized, and it was some little time before they could get them organized again to make a second attempt to charge the crest of the hill. About half an hour after that they made the attempt and were repulsed by a very severe and galling fire, and, I must say, they retreated in great disorder and confusion back to our first line of troops, where they were rallied, and there they remained during the rest of the day and behaved very well. I would add, that my troops are raw new troops, and never had been drilled two weeks from the day they entered the service till that day.

Question. If your division had been the leading one in the assault, would they have succeeded in taking Cemetery hill ?

Answer. I have not the slightest doubt, from the manner in which they went in under very heavy fire, that had they gone in in the first instance when the fire was comparatively light, they would have carried the crest of Cemetery hill beyond a doubt.

By the court :

Question. Did you go forward with your division ?

Answer. I went to our first line of works, and there remained to see my command go through. I would state, that I deemed it more necessary that I should see that they all went in than that I should go in myself, as there was no hesitation in their going forward whatever. I was at no time at a further distance than eighty or ninety yards from my division.

Question. Where were you after they had all passed the crater, and were, as you say, at one time half an hour in reorganizing ?

Answer. I was immediately in front of the crater on our front line of works. I would also state that one regiment was checked between the crater and our front line, unable to get through; and I was at that time making every effort to get that regiment through, with the intention of passing through myself as soon as they got past, but it was impossible for me to do so from the crowded state of the troops that were there.

Question. Were the obstructions in front of the first line of works of a character to admit the passage of a horseman or a piece of artillery, after the whole corps had passed ?

Answer. They would not admit of the passage of either, because the parapet of the rifle-pit had never been dug away. I was compelled to remove *abatis* on our own front, under fire, to get my command through by the flank.

Brigadier General O. B. WILCOX, United States volunteers, being duly sworn, says to questions by judge advocate :

Question. Were you in a position to see the operation of the assault before Petersburg on the 30th July, and in what capacity ?

Answer. I commanded the 3d division of the 9th army corps. At the time of the explosion of the mine I was at Romer's battery, just in rear of my second brigade, and in good position to observe the assault.

Question. Do you regard the attack as a failure ?

Answer. I do.

Question. State some of the causes of it.

Answer. The first and most obvious cause was the failure of the 1st division to go forward when there was no firing, for the fire of the enemy was suspended for fifteen to twenty minutes. In the next place, I think that the troops that went in support of the leading division should have gone in almost simultaneously with it, and should have gone to the right and left, avoiding the crater, but going near it, and then bearing down the enemy's works to the right and left, so as to have prevented the enemy bringing flank and reverse fires to bear on the advancing columns. The order of attack stated that my division should wait until the 1st division had cleared the enemy's works. For that reason, of course, the three divisions could not have gone in simultaneously. It was the published order that prevented it in part. The attention of the enemy was not attracted to any other point than the crater. I consider that the third reason. Almost as soon as the enemy's first astonishment was over they concentrated an almost circular fire around the crater. Their field batteries came out in position on different points on the Jerusalem plank road and on Cemetery hill. They kept up a flank and reverse fire; and a battery in the grove of trees on our right was so situated, the line of the rebel works taking a direction a little re-entering, that almost as soon as they opened fire at all, they began to fire nearly in rear of the crater. I would say, that at the meeting in General Burnside's tent, when Generals Ord and Meade were present, I supposed it was intended that the two divisions following the leading division should move to the right and left, and that the duty of the 9th corps was to clear the ground to enable the 18th corps to move forward. If that plan had been carried out, I think it would have been successful; but I do not think that the temporary occupation of Cemetery hill by a small force would have insured the success of that attack. I think that ultimately they would have been driven out, unless we had a large force, two corps at least, to fight a battle at those works. Now, to go back to the interview which General Burnside had with his division commanders, where General Meade was present, it was a well-understood thing there that this was intended to be a surprise, and it was thought by all the generals, including General Meade himself, that, unless it should be a complete surprise, it would be a failure; and the written order which was published to the commanders did not fully, in fact did not substantially, give the order of attack as it was understood at this interview. I mean General Burnside's order of attack. At the time the matter was talked over I certainly understood that I was to move down and clear the enemy's works on the left, and then move up towards the Jerusalem plank road. The order stated that I would bear to the left and take a position on the Jerusalem plank road.

Question. What preparations were made, and what orders were given, to pass troops over the parapet and through the enemy's works ?

Answer. None but the written orders before the court. The *abatis*, what was left of it when my division passed over, was no obstacle whatever.

Major General A. A. HUMPHREYS, United States volunteers, chief of staff, being duly sworn, says to questions by the judge advocate :

Question. Were you with General Meade during the assault on the 30th of July ?

Answer. I was.

Question. What was the substance or language of a despatch which he received from Lieutenant Colonel Loring, assistant inspector general of the 9th corps, but addressed to General Burnside, about 5.45 a. m. of that day ?

Answer. The substance of the despatch was, that some of the troops there, I think Ledlie's division, were in the crater and would not go forward, and asking that some other division or some other troops should be sent to go forward to the crest. The main point with me, however, was, that his troops were in the crater, and were not going forward as they ought to have done.

Question. Relate what passed at the interviews between General Burnside and Generals Grant and Meade after the former had been directed to withdraw the troops from the crater, and prior to the withdrawal of the troops.

Answer. I recollect the directions to General Burnside, which were, that if he could not withdraw his troops with security during the day they should be withdrawn at night; that the best time for the withdrawal of the troops he himself should be the judge of. My impression is that General Burnside did not wish to withdraw them. He certainly so expressed himself to me after General Meade left, for I did not leave the headquarters of General Burnside the same time as General Meade, but remained there a short time. I do not know whether he so expressed himself to General Meade and General Grant or not. I thought I understood the conditions that existed there, and there was no question in my mind as to the necessity of withdrawing them.

Question. Did you understand it to be his wish to maintain his position in the crater ?

Answer. I did not pay much attention to what he said to General Meade and General Grant, but he so expressed himself to me afterwards; but inasmuch as he stated no facts which put a different aspect on the condition of things, I did not consider that he gave very good reasons for his wish. He certainly differed from General Ord.

Question. Did you hear General Ord give any opinion as to the probable success of carrying the crest if persisted in for a certain time; and if so, what was it ?

Answer. I heard him then or before express the opinion that the time was past. He was averse to it. I did not pay so much attention to what was said at that time, for the reason that the facts were well known, and the conclusions come to in regard to them.

Question. Were you at the fourteen-gun battery, near which General Burnside had his temporary headquarters, on that day ?

Answer. Yes, I rode out there; I think it was between 10 and 11 o'clock when I rode out there. I had been there before, and am somewhat familiar with the ground.

Question. Could anything be seen from there with sufficient distinctness to have enabled the commanding general to give orders other than he did, from the point occupied by him ?

Answer. I think not. I do not think it made any difference whether he was there, or whether he was at the point he occupied. In the gratification of a personal wish to see simply, he might have seen something more, but it would not have made any difference in the conclusions arrived at; he would have understood matters as thoroughly where he was as if he had seen them.

Question. Ought the assault on that day to have been successful ?

Answer. I think so; I was confident that it would have been successful.

Brigadier General H. I. HUNT, United States volunteers, chief of artillery, army of the Potomac, being duly sworn, says, in answer to questions by judge advocate:

Question. Please to state in what capacity you were serving during the assault on the enemy's lines on the 30th July, and days preceding it.

Answer. I am chief of artillery of the army of the Potomac, and had charge of the siege operations on this side of the Appomattox.

Question. Relate briefly what arrangements were made for opposing the enemy's artillery fire on that occasion, and if they were successfully carried out.

Answer. Batteries that had been constructed several weeks preceding the assault had armaments placed in them, from the plank road to the Hare house; there were eighteen siege guns in the line, eighteen large mortars, and twenty-eight cohorns along in the lines in front, and some eighty field-pieces. The object was to silence the fire of the enemy's batteries in the redoubt which formed their salient on the plank road, and especially all of their guns which bore upon the ground in front of the mine. The fire was opened immediately upon the explosion of the mine, and was very successful in keeping down the enemy's fire.

Question. Was the enemy's artillery fire formidable, and particularly directed to the point of our assault, after the explosion of the mine?

Answer. The fire did not become very formidable; it was almost entirely silenced soon after it opened, with the exception of one gun in a battery next to the mine, and a battery on the crest beyond the mine, and a few guns that were used by the enemy on our right of the mine, towards the railroad. The gun that was in the work next the mine was so placed that it was protected from all direct fire, and a sufficient number of mortars could not be brought to bear upon it to stop it. No large mortars had been placed to control that battery, as, according to the plan of assault, that work might reasonably be supposed to fall into our hands within ten or fifteen minutes after the explosion; all the guns in that battery were silenced, however, excepting that one. The battery on the crest of the hill directly in front of the mine was almost shut up after firing two or three rounds, as we had some heavy guns bearing on it, and a number of field guns. I was not where I could see the fire from our right of the mine. I had Colonel Monroe in charge there, and he reported that the fire was pretty well kept down. On the left they occasionally fired a shot.

Question. Under the circumstances, then, ought not the assault have succeeded?

Answer. I think so; that is, so far as it depended upon us. I do not know what the enemy had behind the crest; the object was to take the crest.

Question. Have you formed any opinion as to the causes of the failure of the assault on that occasion?

Answer. I do not know what other causes might have existed, but I attributed the failure to the want of promptitude in pushing forward assaulting columns immediately on the explosion of the mine. I believed, from the first, that if that were not done promptly the attack would probably fail.

Question. Was the enemy's fire directed upon the point of attack very formidable at any time, so as to prevent reasonably resolute troops from pushing onward?

Answer. I think not; certainly not within the period within which their advance should have taken place.

Lieutenant W. H. BEUYAURD, United States engineers, being duly sworn says to questions by judge advocate:

Question. Were you present at the assault on the rebel lines on the 30th July, and in what capacity?

Answer. I was with General Burnside on that morning. I was sent by Major Duane to report to him for duty as an engineer.

Question. Were you in a situation then to see the progress of events on that day?

Answer. Not all the time; a portion of the time I was with General Burnside at his headquarters, and then, afterwards, I was at different points along the front. I was not in such a position that I could see everything that was going on.

Question. Were there working parties for the assaulting columns, and engineer officers to lead them?

Answer. Not that I know of.

Question. No arrangements had been made with you by General Burnside for anything of that sort?

Answer. No, sir; not previous to the assault.

Question. Do you know if any arrangements were made for the debouch of our troops from our lines, and their passage over the enemy's?

Answer. No, sir; General Burnside did not give me any instructions in regard to taking away the abatis or the rifle-pit on the front line.

Question. Were the obstructions on the enemy's line formidable, and of what did they consist?

Answer. They had a pretty strong abatis in front of their rifle-pits.

Question. Could they have been removed by working parties that usually accompany assaulting columns?

Answer. I did not go near enough to the crater along that line to judge or that, although it appeared to be merely the usual abatis placed in front of, works, and placed in the usual position.

Question. Did you see the explosion of the mine?

Answer. Yes, sir.

Question. Was its effect to clear for any distance, and if so how much, the enemy's parapets?

Answer. Only a portion of the parapet was blown down; a portion of it remained standing. I suppose the crater that was formed might have been forty or fifty yards long, and perhaps twenty wide.

Question. Was the breach sufficient and practicable for the passage of troops in line?

Answer. I did not go in to look at the crater, and consequently I could not say whether they could go in without further work being done or not. I could not tell how deep it was.

Question. As an engineer would you criticise that point of attack?

Answer. I had been there working on that front before, and I had frequently expressed the opinion that the enemy could bring a flank fire all along there. That is, their line formed a kind of re-entering there.

Question. Did you ever chance to hear why that point was selected, or do you know?

Answer. I did hear that that mine was made because that hollow in front was a good position to run a mine from.

Question. State briefly some of the causes, in your opinion, of the failure of the assault.

Answer. I think one cause was the way in which the troops were taken in by the flank, passed down these covered ways, one on the right and the other on the left, on which General Ferrero's troops went down. I understand that only

a portion of our parapet was taken away, and the troops had to go through by the flank instead of advancing in line. The portion of the ground south of the covered way was the way along which the troops could have advanced in line, the railroad cut being only six feet high in one place. The troops could easily have advanced through that. The troops were not in their proper positions at the time of the assault; that is, a portion of the troops were away back beyond the edge of those woods, when they should have been in the hollow.

By the court:

Question. Had you been placed in charge of a proper working party, suitably equipped, could you not, immediately after the explosion of the mine, have levelled the enemy's parapets so as to have allowed troops in line of battle to have passed through?

Answer. I think I could. When the enemy afterwards had a flank fire between the enemy's line and ours, I offered to General Burnside to run a covered way from our line to the enemy's line on the right and left of the crater. (Lines marked on map 66 *a* and *a'*.)

By the judge advocate:

Question. Would any advantage have ensued from simply holding the crater without advancing further?

Answer. No, sir; I do not think so.

By the court:

Question. Were there any preparations made in the way of collecting gabions and so forth, so that if the troops had been successful we could have crowned the crest?

Answer. No, sir, not that I know of.

Question. Were tools collected or used, picks, shovels, axes, &c.?

Answer. I did not see any.

The court adjourned, to meet at ten o'clock on the 1st of September.

Record of the court of inquiry instituted by Special Orders No. 258, 1864, War Department.

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TENTH DAY.

HEADQUARTERS SECOND CORPS.
September 1, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

The proceedings of the 9th day were read and approved.

General Wilcox recalled.

By the judge advocate :

Question. In your testimony yesterday you stated that at the time of the explosion of the mine you were at Romer's battery. Where were you the rest of the time ?

Answer. Immediately after the explosion I started for the head of my column, which was on the left and in the rear of the first division. I arrived at the front line of works nearest the crater before the whole of the first division had crossed. The head of my column had already commenced moving for the crater, and was then occupying the left portion of the enemy's works.

By the court :

Question. You stated that General Burnside's order directed that your division should bear to the left and take up a position on the Jerusalem plank road. What was the cause of the failure to execute this manœuvre ?

Answer. The first division was to move on Cemetery hill. I would state that Cemetery hill bore rather to the right of my front, so that it was necessary that Cemetery hill should be occupied before any ground beyond it could be occupied. In pursuance of my original expectation I had given orders that the leading regiment should turn down to the left in the line of works, and the 27th Michigan started down that line. As soon as General Burnside perceived that the first division was not moving forward, he sent me orders to move forward my division direct upon Cemetery hill. My idea was to carry out the spirit of what was understood the day before, and my plan was to throw the whole division on the left into line, so that the right would rest on the Jerusalem plank road ; and that would have completely protected the flank of the first division. This movement was begun, but the commanding officer of the 27th Michigan was shot, and the way the first division moved forward by division created more or less confusion ; and by the time I received the order to advance on Cemetery hill, or before that, in fact, the enemy had concentrated such a fire that we could not advance any further.

Brigadier General S. G. GRIFFIN, United States volunteers, being duly sworn, says to questions by judge advocate :

Question. Were you at the assault on the 30th of July, and what was your command ?

Answer. I was at the assault ; my command was the second brigade, second division, (General Potter's,) 9th army corps.

Question. Did you regard that assault as a failure ?

Answer. Yes, sir, I think I should, because we did not hold the ground.

Question. State some of the causes that you attribute this to.

Answer. In the first place I should say that the troops in the front did not advance exactly as they should, nor as far as they should. Probably the best ground was not selected. Then the cause of our not holding the ground was the piling in of so many troops in certain parts of the ground, where there was no room for them, and a panic having seized those troops caused the disaster.

The enemy concentrated all their fire upon that point as soon as we attacked, which was another great reason, no doubt. We received their fire at that point from all directions, and very soon after we first arrived there it was a very sharp fire.

Question. Why were all the troops directed to that point?

Answer. I do not know.

Question. Do you think that arrangement was faulty?

Answer. The execution of the plan seemed to be faulty.

Question. Were any arrangements made for passing the troops through the abatis of our line, and over the parapet in front of the enemy's?

Answer. For my part, in my brigade I had a pioneer corps and skirmishers to clear the way for them.

Question. Did your command go beyond the crater?

Answer. It did.

Question. About how far?

Answer. I should judge two hundred yards. It might be more, or it might be less. It could not have been much less, however; that is, as near as I can judge.

Question. Why did you retire?

Answer. My troops were driven back from that point. They afterwards retired from the crater under orders. They were driven back from the advanced position at the time the panic seized the negroes, which more or less affected all our troops, and the negroes rushing through them as they did, carried them back. The rebels made a very desperate attack at the same time.

Question. If the enemy's parapets had been levelled on each side of the crater, or made practicable for the passage of troops, what would have been the probable result?

Answer. I am not sure that I can tell what the result would have been. Probably the troops might have advanced more readily and with more force, but it was not a thing easy to do.

Question. Do you know anything that prevented the troops, having attained the crater, from going forward immediately to the crest of Cemetery hill?

Answer. Nothing more than the sharp fire from the enemy.

Question. What kind of fire?

Answer. All kinds. I would state here that there is another reason why my troops could not go forward. The ground where they were was broken up with covered ways and numerous rifle pits of the rebels. We had just driven the rebels out, and my troops occupied their places; therefore, in that position, disconnected as many of them were, it was difficult and almost impossible to form them to make a direct charge; but if a column had moved further to the left, I did not see any reason why they should not have gone in.

Question. Suppose you had had working parties to level the works, those working parties being supplied with fascines and other necessary preparations to render a passage practicable; could you not have gone forward then?

Answer. I do not think there was time for that work. It would have taken hours. I think the time to go forward was at the first, because, very soon after we went there, the enemy concentrated their troops and poured into us at that point a terrible fire from every quarter.

Question. The great mistake, then, was the halting of the troops in the crater?

Answer. Yes, sir.

Question. Whose troops were they?

Answer. General Ledlie's division.

Question. Could the troops have gone over the enemy's parapets on the left of the crater in line of battle immediately after the explosion of the mine?

Answer. I think they could, but I could not say positively, because my attention was directed more particularly to the right of the crater.

Question. Could they have done it on the right?

Answer. No, sir, on account of those numerous cross-lines and pits and covered ways, which were full of the enemy's troops even after we arrived there. And others kept pouring in in addition to those that were already there.

Question. When the troops retired from the crater, was it compulsory from the enemy's operations, or by orders from your commander?

Answer. Partly both. We retired because we had orders. At the same time a column of troops came up to attack the crater, and we retired instead of stopping to fight. This force of the enemy came out of a ravine, and we did not see them till they appeared on the rising ground immediately in front of us.

Question. Where was your position during the contest?

Answer. I went up with my brigade, and while we were there I was most of the time in the crater, or near it with my troops all the time.

Question. What was the force that came out to attack you—the force that was exposed in the open?

Answer. Five or six hundred men were all that we could see. I did not see either the right or left of the line. I saw the centre of the line as it appeared to me. It was a good line of battle. Probably, if we had not been under orders to evacuate, we should have fought them and tried to hold our position; but, according to the orders, we withdrew.

Brigadier General J. F. HARTRAUFT, United States volunteers, being duly sworn, says to questions by judge advocate:

Question. Were you at the assault on the 30th of July, and what was your command?

Answer. I was there; my command was the first brigade of the third division (General Wilcox's) of the 9th corps.

Question. Did you regard the attack as a failure?

Answer. I did.

Question. What, in your opinion, were some of the causes of that failure?

Answer. The massing of the troops in the crater, where they could not be used with any effect. I think that the troops, instead of being sent to the crater, should have been sent to the right and left, so as to have moved in line of battle, when they could have advanced in some kind of shape; but after they came into the crater, in the confusion they were in, other troops being brought up only increased the confusion, and by that time the enfilading fire of the enemy's artillery and infantry had become very annoying, which also made it very difficult to rally and form the troops.

Question. Do you know any reasons why the troops did not go to the right and left of the crater? Were there any physical obstacles to prevent them?

Answer. No, I think troops could have been sent there. The second brigade of my division was sent to the left of the crater. They took a portion of the pits. If a vigorous attack had been made on the right and left of the crater, I think the enemy's pits could have been taken without any difficulty, and the line occupied.

Question. What was the formation of your command in moving forward?

Answer. I formed my command, which was immediately in rear of the first division, (which was the assaulting division,) in one or two regiments front. I put two small regiments together; and my instructions were, after I passed through the crater with my advance, to form to the left of the first division, protecting its left flank while they were advancing, and form my line as the regiments would come up, so as to form a line of battle on the left of the first division.

Question. If the troops that first went into the crater had not delayed there, could they not, considering the consternation that the explosion of the mine made in the enemy's camp, have got forward to the crest of Cemetery Hill?

Answer. I think they could have moved up to that crest immediately, if they had made no halt at all, under the consternation of the enemy. I think they would have had to re-enforce them speedily in order to hold that hill.

Question. The re-enforcements were there, were they not?

Answer. Yes, sir.

Question. And there was nothing to prevent that result?

Answer. I have thought, sometimes, that it would have been difficult to have sent troops through the crater in sufficient force to sustain the first division in advance on that hill; that the troops would have had, after all, to have been sent to the right and left of the crater, because very soon after I was in the crater myself the enemy were seen on the hill about the position we were to take, and was moving troops to the right. A dozen rebels were seen in the corn-field. My brigade moved right on after the first division, and after my fourth regiment had gone forward I went forward myself to the crater. The fifth regiment was then ordered forward, and was going up.

Question. Did you remain till the troops retired?

Answer. Yes, sir.

Question. Did they retire in confusion?

Answer. Yes, sir.

Question. Driven out?

Answer. They were driven out at the same time that I had passed the word to retire. It was a simultaneous thing. When they saw the assaulting column within probably one hundred feet of the works, I passed the word as well as it could be passed, for everybody to retire, and I left myself at that time. General Griffin and myself were together at that time. The order to retire we had indorsed to the effect that we thought we could not withdraw the troops that were there on account of the enfilading fire over the ground between our rifle pits and the crater without losing a great portion of them, that ground being enfiladed with artillery and infantry fire. They had at that time brought their infantry down along their pits on both sides of the crater, so that their sharpshooters had good range, and were in good position. Accordingly we requested that our lines should open with artillery and infantry, bearing on the right and left of the crater, under which fire we would be able to withdraw a greater portion of the troops, and, in fact, every one that could get away. While we were waiting for the approval of that indorsement, and the opening of the fire, this assaulting column of the enemy came up, and we concluded—General Griffin and myself—that there was no use in holding it any longer, and so we retired.

By the court:

Question. What was the fault owing to—owing to the orders that were given, or to the execution of those orders? Was it that the plan was bad, or that the troops or their commanders behaved badly?

Answer. Not being familiar with all the orders and arrangements, I could not say. So far as my own command was concerned, we did all that we could do.

Question. Could you have been ordered to have done it in a better way?

Answer. I think if they had gone forward in line of battle it would have been successful. I consulted with General Bartlett and General Griffin and Colonel Humphreys, and we were all of the opinion that no more troops should be sent to the crater. After that the colored division passed right through the crater while we were in it.

Question. How did those colored troops behave?

Answer. They passed to the front just as well as any troops; but they were certainly not in very good condition to resist an attack, because in passing through the crater they got confused; their regimental and company organization was completely gone.

Question. What general officers were in or about the crater on the enemy's line during all this time?

Answer. General Griffin, General Bartlett and myself, of the 9th corps, and the general commanding the division of the 10th corps that was there. (General Turner.) I did not see any others, although there might have been others there.

Surgeon O. P. CHUBB, 20th Michigan volunteers, 9th corps, being duly sworn, says to questions by judge advocate:

Question. Were you at the assault on the 30th of July?

Answer. I was.

Question. State what you did there.

Answer. I accompanied the 2d brigade, of the 3d division of the 9th corps, across the ravine, and up to within about ten rods of our breastworks, at the point where the troops passed through immediately after the explosion of the mine. I took position in a bomb-proof, which had been used as some regimental headquarters, and remained there for the purpose of dressing wounded. This bomb-proof is located at a point about ten rods in rear of our line. Shortly after I took up that position, Generals Ledlie, of the 1st division, and Ferrero, of the 4th, came up to the front of the bomb-proof, and shortly afterward came in and took seats. This was in the morning, about half an hour after the explosion of the mine. That was some time before the colored troops came up. The 3d division (General Wilcox's) was then lying in a little dip of the ground—lying flat upon the ground to avoid shelling at that point, and General Ledlie's troops, of the 1st division, had crossed over our breastworks and gone over to the fort immediately after the explosion. I saw them go up. I was where I could see the explosion and the movement of the troops as they passed over the space between our works and the fort. Our division and our brigade of that division remained in that position for some time. General Ledlie came there and sat down in front of the place where I was; remained there some little time, and afterwards went inside and sat down. I could not tell how long, but not a great length of time after, because General Ferrero came in. His troops were then lying in the covered way and on the flat. They had not yet come up to go into action. While things were in that position, our 3d division made a move, charged over the works, some of them went to the fort, and some, I believe, came back. Then General Ferrero had brought his division up to that point, and seemed to be waiting for some orders or movement. General Ledlie received orders in my hearing to move his troops forward from where they were then lying. The order came something like this, as near as I can recollect: "The general wishes you to move your troops forward to the crest of the hill, and hold it." To the best of my recollection, that was the meaning of the order at least, and, I think, very near the words. I do not know whom the order came from. It was brought by an officer, and I supposed that "the general" meant General Burnside. General Ledlie despatched an aid or some other officer to order that done. Then, shortly afterwards, came an order to General Ferrero to move his division through, and charge down to the city. He replied that he would do so "as soon as those troops were out of the way." He did not designate what troops, so that I understood "those troops" meant the troops that were already there. But this order came two or three times, and the last time it came the order was peremptory "to move his troops forward at once." His answer to the order always was, that he would do so as soon as "those troops" were out of the way; and whenever General Ferrero made that answer, General Ledlie sent an aid to order the troops out of the way, and see that it was done, so that it became my impression that it was his troops that were in the way. These two general officers were in the bomb-proof with me. General Ledlie's troops were in the crater, and General Ferrero's

were in the rear. After General Ferrero received this last peremptory order, he went out; General Ledlie went out with him, and the colored troops commenced moving past the door of the bomb-proof—as it was in the track that troops took—and moved up; and I stepped out, and saw them go over our works just in front of where General Ledlie's division passed over. Then they passed out of sight of where I was standing; but in a very short time I heard they were coming back; and sure enough, they poured down all along in that vicinity, with a good many white troops mixed with them. About that time General Ferrero returned. I am not positive whether General Ledlie returned or not, and in answer to somebody who asked him how the battle was going, General Ferrero said we had lost everything, or something to that effect; that we were repulsed. He said it was nonsense to send a single body of troops, colored or white, forward at one single place, in front of lines held by us, to throw them in the face of a re-enforced enemy, or an enemy who had opportunities to bring other forces to bear. General Ferrero said he thought his division was needlessly slaughtered.

By the court:

Question. Did you see General Ledlie when his division advanced?

Answer. No, sir, I did not. Our division was lying in the covered way at the point in our first line of works about opposite the fourteen-gun battery, as it is called, and I had passed up the line of the hill to the crest, where I looked over the breastwork and saw those troops move forward, but I could not see everything distinctly, because there was considerable distance across the ravine or hollow to his division.

Question. Was there any conversation between those generals and yourself, while they were in the bomb-proof, bearing on this subject?

Answer. I asked General Ledlie, soon after he came in, if his division had been properly supported. The reason of my asking it was that I thought I heard some remark of his that led me to think it had not been, and, besides, I myself was entirely in the dark in regard to the delay; and so I asked him if his division had been properly supported as it was intended, and he said it had.

Question. Did you hear him give any reason for the division halting?

Answer. No, sir. From the efforts he made to have them ordered forward somewhere, I judged that it was contrary to his expectation that they did halt. He frequently sent up aids to have them moved forward somewhere, and from the order that came to him I supposed it was to the crest of the hill. The aid who brought the order said: "The general wishes you to move forward to the crest of the hill."

Question. Do you know any reason why he was not with his troops himself?

Answer. No, sir. But during almost the last moments of his stay there he sent an aid to ascertain how things were going on, and remarked that he could not go himself, as he had been hurt in the side by a spent ball. I cannot state positively when this occurred; it seemed to be after I first saw him; but I recollect his having mentioned that fact quite late in the forenoon, nearly noon, for the first time. I have a strong impression that he came back there after General Ferrero's troops moved forward, but I could not say so positively.

Colonel H. G. THOMAS, 19th United States colored troops, being duly sworn, says to questions by judge advocate:

Question. Were you at the assault on the 30th of July, and what was your command?

Answer. I was at the assault on the 30th of July, and commanded the second brigade, fourth division, 9th corps, (colored troops.)

Question. What was the formation of your troops in going to the assault?

Answer. The formation was by file left in front, which brought us faced by the rear rank when we made the charge.

Question. The head of your troops struck the enemy's line where?

Answer. I forced my brigade around the right of the crater, contrary to orders, because the crater was so full that no man could get through; that is, I left two staff officers to force them through. I went straight to the front and filed to the right, and went into these rifle-pits in the enemy's line as far as the head of the first brigade of our division, which I was ordered to support.

Question. Did you get beyond the line of the crater with your troops?

Answer. I did, sir.

Question. How far?

Answer. I should say about between three and four hundred yards to the right of the crater, and in front of it. I was ordered to support the first brigade when it made its charge.

Question. Did you get beyond the enemy's line?

Answer. I did, sir; I led a charge which was not successful. The moment I reached the head of the first brigade I started out the 31st colored regiment, which was in front, but it lost its three ranking officers in getting in position, and did not go out well.

Question. What, in your opinion, were some of the causes of the failure of the general assault on that day?

Answer. So far as I can judge from my own stand-point, my utter inability to make a decent charge with my own brigade was the fact that the pits, into which we were sent, were entirely occupied by dead and dying rebel troops, and our own from the first division of our corps, General Ledlie's. There was no room for us to move up. We were delayed, I should think, an hour and a half, in the covered way through which we moved, from the fact, so far as I can learn, that the first division did not make the charge. We were to occupy the pits after they made the charge.

Question. Do you know why the first division did not go forward?

Answer. I do not, sir.

Question. Did you see any of the appliances for overcoming obstacles that usually accompany troops—working parties with tools?

Answer. I saw no such preparations to remove obstacles in the enemy's line. I had no such assistance.

Question. Do you think the mode of marching up your command was a judicious one—the form, I mean?

Answer. No, sir; it was injudicious, for two reasons: First, we moved up by the flank; that I consider injudicious. And, secondly, we were ordered up left in front, which made us face by the rear rank, which was not a satisfactory way of manœuvring.

Question. Was it a verbal or a written order; and by whom was it issued?

Answer. It was a verbal order, issued by General Ferrero about eleven o'clock on the night before. The order to me that night was to go up by division, follow the first brigade, and to move left in front. But early in the morning I learned from a staff officer, whom I sent out to tell me when the first brigade moved, that it was filing along the covered way. My instructions were to follow the first brigade. I was detained at least an hour and a half in the covered way by the troops in front, and by the order of the assistant inspector general of the corps. He finding the pits into which we were to go full of troops, suspended the other order until he could see General Burnside.

Question. How did your particular command retire from the front?

Answer. In confusion.

Question. Driven?

Answer. Driven back by a charge of the enemy.

Question. And not by any orders?

Answer. No, sir; they received no orders. They were ordered to stop by myself and all my staff, who were in the pits. When I got into this position on the right of the crater, the fire was very severe; there was also a very severe enfilading fire from the right. I attempted one charge, without success, the moment I reached there. I could not get more than fifty men out. I sent word to General Burnside by Major Van Buren, of his staff—as he was the only staff officer I saw in the pits except my own—that unless a movement was made to the right, to stop the enfilading fire, not a man could live to reach the crest; but that I should try another charge in ten minutes, and hoped I would be supported. In about eight minutes I received a written order from General Ferrero in pretty near these words: "Colonels Siegfried and Thomas, commanding first and second brigades: If you have not already done so, you will immediately proceed to take the crest in your front." It was signed in the ordinary official manner: "By order of General Ferrero. George A. Hicks, captain and assistant adjutant general." I cannot produce that order, because I destroyed it when I was captured in Petersburg. Colonel Siegfried had, I think, already received it, as he was in the crater. I sent word to Colonel Siegfried's brigade on my right, where I supposed the colonel to be, that I was about to charge; that we should go over with a yell, and that I hoped to be supported. I went over with two regiments and part of a third, but I was driven back. The moment they came back the white troops in the pits all left, and they after them. I was not supported at all in my charge.

Question. Where was the division commander all this time?

Answer. I do not know. When I went up with my brigade he was in a bomb-proof on the left, with the commanding officer of the first division. Generals Wilcox, Ledlie, and Ferrero were in the bomb-proof on the left.

Question. Was the bomb-proof a good place to see what was going on?

Answer. No, sir; there were places near there where something could be seen, but the earth about the crater prevented almost anything being seen immediately to the left of it. The dirt was thrown up very high. There were, I think, however, places near there where a view could be got.

Question. From what you know of affairs that day, is it your opinion that the assault ought to have been successful if the troops engaged in it had performed their duty?

Answer. Going up so late as I did, I am not a good judge, but I think from what I could see at the late hour at which I got in, that if the division that went in first had gone ahead, there is no question of our taking the crest on that ridge, Cemetery hill, hardly with the loss of a man. We waited in the covered way over an hour, with almost no musketry on our right. We were detained; there we could not get up.

By the court:

Question. Did you ever go over that ground afterwards?

Answer. I did, sir.

Question. Under what circumstances?

Answer. I went over it two days afterwards, the 1st of August, when the flag of truce was out.

Question. Did you see anything in the nature of the enemy's defences that would change the opinion you formed on the day of the assault?

Answer. No, sir.

Question. Did you see any obstacles in the nature of the ground?

Answer. No, sir.

Question. Did you have an opportunity of seeing what the enemy had on the top of Cemetery hill?

Answer. No, sir; I did not have an opportunity of seeing just what they might have had there.

Question. Did you see any works there?

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Answer. No, sir; I do not think there were any.

Question. How did the colored troops behave?

Answer. They went up as well as I ever saw troops go up—well closed, perfectly enthusiastic. They came back very badly. They came back on a run, every man for himself. It is but justice to the line officers to say, that more than two-thirds of them were shot; and to the colored troops, that the white troops were running back just ahead of them.

Colonel CHARLES S. RUSSELL, 28th United States colored troops, being duly sworn, says to questions by the judge advocate:

Question. Were you at the assault on the 30th?

Answer. Yes, sir.

Question. And what was your command?

Answer. I was a lieutenant colonel, commanding six companies of the 28th United States colored troops, Thomas's brigade of Ferrero's division.

Question. Did your command participate in the assault?

Answer. Yes, sir. We left the covered way to make the assault before eight o'clock, and ten minutes after eight part of my regiment with two others went over the outside of the enemy's line into what seemed to be a covered way beyond, to go to Cemetery hill. Mine was to have been third in order, but it became second.

Question. How far in advance did you get toward Cemetery hill?

Answer. Not exceeding fifty yards. We were driven back.

Question. By what?

Answer. I should judge by about from two to four hundred men, infantry, which rose up from a little ravine and charged us. Being all mixed up and in confusion, and new troops, we had to come back.

Question. Do you think you could have maintained yourself in that position if you had been supported by troops that were known to have been in the crater at that time?

Answer. No, sir; I do not think we could, considering our condition. There were no two companies together; the officers were shot down, and the troops were very much dispirited. They were all in there just as thick as they could possibly stick. The orders were to advance and take the crest of that hill at once, and I went right over with all the men I could gather, supposing that all the rest would follow. Not more than 150 or 200 men out of the three regiments went outside.

Question. Did your troops sustain a good deal of loss in that affair?

Answer. Yes, sir; I lost nearly half, and seven officers out of eleven.

By the court:

Question. Do you think that if you had advanced on the right or left of the crater, where the ground was more practicable, you would have done better?

Answer. Yes, sir; I think that if we had gone up there an hour before we could have carried the crest, for there was but little musketry fire at that time.

Question. Where were you during that interval?

Answer. In the covered way, in rear of a battery of 4½-inch guns.

Question. Was the division commander around there?

Answer. The division commander was at the head of the division. I saw him when we went into the crater. I passed him and spoke to him. He was then on the left of the first line of rifle-pits built by our people. I mean the most advanced line of rifle-pits.

Question. What did Colonel Siegfried's brigade do?

Answer. That brigade, instead of going into the crater, as near as I can tell, seemed to file to the right; at least that was my impression.

Question. Did they go over the enemy's breastworks?

Answer. I do not know, sir. My impression is that they did not.

Question. I mean the breastworks of which the crater was a continuation.

Answer. No, sir; I do not think they did.

By the judge advocate:

Question. Did you form any opinion as to the cause of that failure?

Answer. Yes, sir.

Question. What was it?

Answer. Delay. It was Lieutenant General Grant who moved us up, about 5 o'clock—for we had not started from our bivouac in those woods at 5 o'clock. General Grant rode up and asked what brigade that was, and what it was doing there. That was some time after the explosion of the mine and the cannonading had commenced. General Grant told us to move on. The order was not given to me directly; it was given to Colonel Thomas. Then we moved into the covered way and remained there till 8 o'clock.

The court adjourned, to meet at 11 o'clock on the 2d September.

ELEVENTH DAY.

SEPTEMBER 2, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadiers General Ayres and Miles, and Colonel Schriver, judge advocate.

The proceedings of the 10th day were read and approved.

Brigadier General A. AMES, United States volunteers, being sworn, says in answers to questions by judge advocate:

Question. Were you present at the assault on the 30th day of July, and what was your command?

Answer. Yes, sir; I was present where I could see the last part of it. I had a division of the 18th army corps.

Question. Did your troops experience any interference from the 9th corps in moving into position in rear on that occasion?

Answer. Not directly. My division was a support. I understood from the commanding officer of the corps that my troops were held in reserve for any emergency that might arise, or a battle that might be fought after we had taken possession of the heights, and at no time were my troops further advanced than the woods in rear of our own works. At one time I was ordered to take my division in to support General Turner's. The idea was that he was to advance, and I was to carry my division in on his right, being careful not to get in advance of him, so as to have his left flank interfered with. Upon receiving the order I understood that I was expected to move to the front through the covered way, but I found that there was still a brigade of General Turner's division in reserve, and as I passed through the covered way I saw that it was blocked up by one of General Turner's brigades. As it was intended that I should go to the front with my troops, I first went to see what kind of ground I was to pass over, and found that the covered way was blocked up by troops, as well as in some places by wounded coming to the rear, and in others by men carrying ammunition to the front. When I got to our most advanced position beyond the creek or bottom, I found that General Turner had a brigade massed there, and that there were evidently more troops in front than could be well handled. I had a conversation with General Turner, and the state of af-

fairs was such that we thought it desirable that General Ord, from whom we received our orders, should know that it was impossible for us to move to the front at once, going down through the covered way, as he intended that we should. I immediately wrote a note to General Ord, requesting him to come down to the front and see the state of affairs for himself, otherwise his orders would probably not be obeyed. I went to the rear and found him and came down to the front with him; and he then decided that our troops, at least that my division, should not move forward.

Question. Were the arrangements that were made for the passage of troops through the abatis near the parapet to go to the front adequate?

Answer. I think not. I did not examine it in particular, but I was down there when part of General Turner's command went to the front, and having nothing else to do, I drove some of his men over the parapet, and I found that they experienced great difficulty in getting through the abatis. The place that I refer to was at our right of the mine.

Question. State some of the causes for the failure of the assault on that occasion, in your opinion.

Answer. I then formed the opinion, and I have not seen any cause to change it, that at the time I was there a clear head, where it could see what was going on, and see the difficulties at the front, might have corrected a great many of the faults that then existed. I think the trouble was, no one person at the front who was responsible, in consequence of which there was no unity of action. It took a long time for commanders in the front to communicate with those in the vicinity of the 14-gun battery in the rear, on the top of the high hill. My idea is that everybody appeared to be acting for himself, with no particular determination to go any further than he was compelled to. So far as I could see, when I arrived there, that appeared to be the state of the case.

Question. Will you, as far as your observation goes, remark upon the formation of the troops as they went forward, and also as to their preparation with all things needful for passing over the enemy's line of works and establishing themselves on the further side?

Answer. I remained in the rear with my troops until I was ordered to advance, and at this time part of the 10th corps had already advanced to our most advanced work, and the rest, as I stated, were in the covered way; and I did not see any of the 9th corps—the white troops of it—make any movements whatever. They had all moved forward and occupied the crater before I had gone to the front, so that I am ignorant of their formation. I know that the colored troops went down the covered way before the division of the 10th corps. It was my opinion, the case being as it was, that the division of the 10th corps should not have passed down the covered way; that they might have passed down the hill to the bottom, then passed over our works, and then up over the open ground towards the enemy's. I think all the troops should have gone that way. The massing of our troops at our most extreme advanced position, and then, crowded as they were, forming them for an advance, created more or less confusion. It would be likely to do so among the best of troops, and certainly it did in the 9th corps. I was going to remark, that it was my opinion that, instead of waiting to have moved down the covered way, it would have been proper for me to have avoided the covered way and moved over the open ground. There was very little fire upon that ground, and the enemy could have probably brought but little there at best; and I think the division could have been moved down the hill and up over the open ground without serious loss—no more than might be expected; and then the troops would have been already in position to have acted with some considerable vigor, and with a reasonable hope of adequate results.

Question. Do you know of, or did you see, anything like fascines, gabions, or

such things as are generally used, and considered necessary, indeed, for an affair of that kind, on the ground?

Answer. No, sir. When I saw the difficulty in passing our troops from our most advanced work to the crater, and saw that there was a little depression where the ground rose on each side of it—not much, to be sure, but almost enough to cover the troops—I recommended to my superiors, General Ord, and also his staff, that men with shovels should go out and throw up—certainly, on the left of the crater, on a little rising ground—a rifle-pit or breastwork to cover our men, so that they could pass from our line of works to the crater without danger; but I learned that there were no tools there for any such work; but it was concluded that these tools should be obtained, and afterwards Captain Farquhar, of the engineers, told me that he had sent for the tools, and that they would go to work and make this covered way. But before anything could be accomplished, the troops were running back.

Question. Do you think the plan for the assault was one that, with ordinary diligence and skill, ought to have been successful?

Answer. I don't see how ordinary troops, with good commanders, and one head to direct, could have possibly failed under the circumstances. It was necessary that some one person should be present to direct the various movements and make them one operation. If there had been, perhaps the result would have been different.

Question. Do you think it would have been any benefit to our arms to have held the crater simply?

Answer. That, I think, would depend upon our ultimate object. I think it would have been no use to have held the crater if we had remained inactive, or on the defensive, as we have done since. If it was our intention to work up to the crest by mining, it would have been so many hundred yards to our advantage.

Question. Would it not have been difficult to hold the place in consequence of the fire that could have been brought to bear upon it? Is not that the re-entrant point in the line?

Answer. Yes, sir. The enemy's fire, at least as I saw it, was at least a semicircle. That is, a continuation of the line of fire from one side in the direction of the crater would strike the enemy's works on the other, making the line of fire a semicircle.

Question. You regard the order to withdraw the troops at the time it was given a judicious one, do you?

Answer. I think so, under the circumstances. I understood that the troops in the crater did not move forward; and that being the case, the sooner they went back the better.

Colonel H. L. ABBOT, 1st Connecticut artillery, being duly sworn, says to questions by judge advocate:

Question. Did you participate in the assault on the 30th July, and what was your command, and what were your particular duties at that time?

Answer. I did participate in the assault. I was in command of all the heavy guns and mortars, 81 in all. I remained most of the time on the left, in charge of the mortar batteries especially. We expected fire from the enemy's salient, and I had sixteen mortars to keep it down, and I remained chiefly there and by Van Ried's battery.

Question. Do you regard the artillery fire on that occasion as very effective; and was it what it ought to have been, and what it was meant to be?

Answer. I do, sir. I think it accomplished all we hoped to do.

Question. Were there at any point obstacles to the fire of the artillery which ought to have been removed?

Answer. Yes, sir; in front of what we call the 14-gun battery.

Question. Please to state what they were.

Answer. This battery is nearly in front of the mine, and some trees were growing a little to its left, which masked the fire of the guns upon the next rebel battery to our left of the mine. These trees it was our wish to have removed. They had not been when the battery was first established, because we did not wish to show the enemy what we were doing. As soon as the six 4½-inch guns were in position, I was anxious to have them cleared away.

Question. What measures did you take to effect that?

Answer. I had, on several occasions, conversation with General Burnside on the subject, in which I referred to the necessity of their being cleared away before we could use the battery to advantage. On the night of the 27th, working parties were ordered by him to cut the trees, but they were driven off after accomplishing very little. On the night of the 28th I represented the matter to General Hunt, chief of artillery, at the headquarters of the army of the Potomac. I went with him to the telegraph office, when he telegraphed General Burnside, I should think about seven o'clock in the evening, urging him to have the trees removed. One of my captains, Captain Pratt, who commanded the battery, was so desirous of having his field of fire clear, that he took some of his own company and cut partially that night, no working parties coming. On the night of the 29th, the matter was again raised—by whom I do not know—but General Burnside declined to have any trees cut on that night, lest it might give the rebels an idea of the attack. But a party was formed which did begin to cut as soon as the mine exploded. It partially but not entirely cleared away the trees, and the guns were enabled to do some service, but they could not see one flanking gun which did us a good deal of harm. I could not see myself, from where I was, exactly what that gun was doing. I received orders from General Hunt—I should think about half past seven o'clock, but I cannot be sure as to the exact time—to try to turn some of my mortars upon it, as it was making trouble. I did so, and made some good shots in that direction, but I do not think the fire of the gun was stopped. The battery was too far off. The trees that were removed were removed partly by my men and partly by the negroes.

Question. Were you in a situation to tell the court whether the artillery fire of the enemy was at all effective, and how soon after the explosion of the mine?

Answer. It would be very difficult to state positively on account of the smoke and the noise of our own guns. I do not think that they fired any guns for nearly an hour. I could not detect any, although I was watching carefully at Van Reid's battery, so as to make any alteration in our fire that might be necessary. I am sure they did not fire from the place we expected it most, in front of the 5th corps. I do not think they fired during the day from here to do any damage. They fired a few shots, however. They fired from a 30-pounder at our battery, which, of course, did not amount to anything. This gun was on the plank road. Over on the right I could not form any exact idea of what they were doing, but I could see that there was certainly no heavy firing. There were only a few straggling shots in that direction. Where we most feared the fire, we did not get any at all. The firing that they did, according to the reports I have received, was from a light battery on the crest, and it was once moved from its position by our mortar batteries on our right, near the left of the 18th corps. We expected fire from the two flanks, and we had a heavy fire of mortars to stop both fires.

Brigadier General B. MOTT, United States volunteers, being duly sworn, says, to questions by judge advocate :

Question. Will you state to the court what time and under what circumstances you relieved the 18th corps, previous to the assault on Petersburg?

Answer. I left across the James river on the night of the 26th July. I crossed the river at 9 o'clock, and one of General Ord's aids met me and put me in position before daylight next morning. As soon as it was dark, on the night of the 29th, I relieved the 18th corps and one division of the 10th, in the intrenchments, and completed the operation about eleven o'clock.

Question. What did General Ord say to you as to the practicability of making an assault in your front in connexion with the operation of the mine?

Answer. He wished me to say to General Hancock, and he said that he had also telegraphed to General Meade, that it was not practicable to make an assault there on account of a good abatis being in front of the enemy's work, and on account of their being well wired, so that it was impossible for the men to get through.

Question. During the assault of General Burnside through the crater and subsequent to that time, did you make any examination to see whether the enemy had left your front or not?

Answer. Yes, sir.

Question. What was the result?

Answer. I sent a staff officer to each brigade commander to instruct them to make a demonstration to see if the enemy had left. General De Trobriand, commanding the 1st brigade, attempted to advance his pickets which he had out. In doing so he had one officer and fifteen men killed. Colonel Madill, commanding the 2d brigade, said he had a position from which he could see if any one left his front, and not a man left since daylight. Colonel McAlister, commanding the 3d brigade, made a demonstration by sounding the bugle for a charge, and snapped some caps, and he immediately received a volley from the enemy's works. He had no pickets out in the daytime.

Question. What time was this?

Answer. I think it was about 7 o'clock, about the time I got a despatch, when General Burnside reported that the enemy had left his front.

The court then adjourned, to meet at 10 o'clock on the 3d of September.

TWELFTH DAY.

SEPTEMBER 3. 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

After taking testimony of all the witnesses present on this day, the proceedings of the eleventh day were read and approved.

Major Duane recalled.

Question. Were there pontoon trains, sand-bags, &c., in readiness at convenient points near the place of assault on the 30th of July, as ordered by Major General Meade?

Answer. There were.

Question. Were engineer officers detailed for each corps?

Answer. There were.

Question. You stated in your former testimony that you were near the 5th corps at the time of the assault. Were there arrangements made for passing the field artillery through the works in front of that corps?

Answer. I think not. I did not understand that it was part of the plan that the troops of the 5th corps should advance through that part of their front. They were to have advanced on the 9th corps front. I understood it was intended that they should pass through the enemy's lines opposite the left of the 9th corps. I had no conversation with General Meade on that subject. I merely inferred it from what I had heard.

Question. Were the pioneers equipped for destroying the enemy's abatis, and

were intrenching tools in readiness for use when required for the 5th corps in their progress against the rebel line?

Answer. I do not know. The pioneers were not under my orders.

Question. Why did not the engineer department take charge of the engineering operations and be responsible for their execution?

Answer. General Burnside took charge of the operations, and I was directed by General Meade not to interfere with them. I had once or twice attempted to send officers to direct the operations, and General Burnside would not allow them to do so.

Lieutenant Colonel JOSEPH H. BARNES, 29th Massachusetts volunteers, being duly sworn, says to questions by judge advocate:

Question. Were you in the crater at the assault on the 30th of July, and what was your command?

Answer. No, sir; I was not in the crater.

Question. Were you near it?

Answer. I was near it on the outside.

Question. In what formation did your command go forward?

Answer. It will be necessary to state that I did not go forward with my command proper. On the night previous I was in command of the division picket, and, on the picket being relieved in accordance with orders I had received, I followed my command, but did not reach my command proper until after they had moved forward to the assault. I went forward to the crater at the head of the troops of the fourth division, (colored troops.)

Question. What was the condition of things in or about the crater when you arrived there?

Answer. When I arrived at the crater the negro troops were pouring through the opening down into the crater. I hesitated about going in there with them, there was so much confusion at the bottom of the crater, and I remained outside with a captain who had been brigade officer of the day, who was with me. We remained outside the crater until all the negro troops had passed in; then, my orders being to join my command, and seeing a color in the earthworks about one hundred yards to the right of the crater, I moved to the right, supposing it might be my color, keeping all the time about one hundred yards from the ditch. Arriving at that point I found it was not my regimental color; but meeting the commanding officer of the 13th Indiana regiment of the 10th corps, I stopped to converse with him. There were in front of me at this time, lying outside the earthworks, negro troops in two lines—that is to say, four deep. They were lying on their faces in line of battle immediately on the outside of the ditch. Directly in front of them was another line of negro troops in the ditch, mingled with the white troops of the first division. I did not go into the crater, because I was desirous, if possible, of learning where my regiment was before getting in. In justice to myself I might say, that it was a much more exposed position outside the ditch than it was inside; but, as I said before, I desired to find my regiment first; but being unable to do so, I had determined to go in and look for it in the ditch. Just as I was about to step forward about half a dozen officers of the negro troops rose up and attempted to get their commands out of the work—for the purpose of advancing, I should judge, although I knew nothing of what the movements were to be, and therefore only judged so from their actions. About 200 men, white and black, rose right in my front, their officers attempting, as I understood, to advance them, but they immediately fell back; and thereupon the two lines of negro troops that had been lying in front of me near the ditch rose to their feet and went back to the rear, marching over the 13th Indiana regiment, which remained in its position. This was about one hundred yards on the right of the crater.

Question. The white troops in the crater belonged to what division?

Answer. They belonged to the first division, (General Ledlie's.)

Question. State to the court, if you know, or give your opinion as to why they hesitated or stopped in the crater and did not go forward.

Answer. Of my own knowledge I do not know.

Question. Did any of the troops of the first division get beyond the crater towards the enemy?

Answer. I do not know.

Question. In your opinion, how did this hesitation or rest in the crater affect the result of the action?

Answer. In my opinion, it affected it in this manner: The hesitation and the length of time consumed in reorganizing or rearranging the men for moving forward enabled the enemy immediately in front to be prepared, not only for our advance, which they were, but to advance against us, which they did.

Question. Do you know whether the division and brigade commanders were present when the troops halted in the crater?

Answer. No, sir; I do not know of my own knowledge.

By the court:

Question. How many troops were there in those two lines which lay just along the enemy's rifle-pit?

Answer. The number from the crater to a short distance to my right was, I should judge, six or seven hundred, possibly more. I could not say how many more there might be, because of the nature of the ground, there being a descent in the ground, beyond which I could not see.

Question. Did they at any time charge up the slope towards Cemetery hill?

Answer. They did not to my knowledge.

Question. When they rose up and went to the rear, in what order did they go?

Answer. In disorder.

Question. Were those troops again brought forward that day?

Answer. Not to my knowledge; some of them were rallied in rear of the next line in the rear.

Lieutenant Colonel GILBERT P. ROBINSON, third Maryland battalion, being duly sworn, says to questions by judge advocate:

Question. Were you in the crater at the assault on the 30th of July, and what was your command on that occasion?

Answer. I was in the crater at the assault, and I formed part of the third line making the assault; the brigade was in three lines; I belonged to the second brigade of the first division.

Question. In what formation did your command go forward?

Answer. In column of battalions.

Question. Did any of your troops get beyond the crater?

Answer. Yes, sir; some of them did. My brigade went to the right of the crater to the breastwork in front of the battery, which was in accordance with the orders from Colonel Marshall the night before.

Question. Did the mass of the troops of the first division halt in the crater and about it, or did they go forward towards the crest?

Answer. I did not see any of them go forward towards the crest. A majority of them went through the crater perpendicular to our front. I kept to the right.

Question. You know the fact that those troops halted there.

Answer. Yes, sir.

Question. Do you know why they halted?

Answer. I could not positively say why, without it was in consequence of the ground being so small and so many of them getting together in the crater. There was great confusion in the crater.

Question. Was not there plenty of ground in front; why did they not go?

Answer. Yes, sir. I cannot answer what transpired on the left. I went to the right and kept up a fire, and advanced as far as I could, until I got to an angle in the works, which was held by the rebels. I used the Spencer rifle upon them. The battalion numbered only fifty-six men.

Question. Was there confusion at that point of attack, or were the troops in any order?

Answer. I could not see any order at all. There was nothing but confusion in the crater. What was in the covered way beyond the crater towards Petersburg I could not say.

Question. Did you have an opportunity of observing whether efforts were made by division and brigade officers to relieve the troops from this disorder?

Answer. Yes, sir; every effort that could be made was made by Colonel Marshall and myself, for he had given orders that I should be obeyed, as I was next in command. I saw no division commander in the crater at the time.

Question. What was the cause of this confusion that you say existed in the crater?

Answer. I cannot assign any reason for the confusion if it was not, as I said, the ground being so much torn up and the place being so small. And when they got in there the fire was pretty strong.

Question. What was the nature of the enemy's fire at that time, heavy or otherwise?

Answer. When we got there the fire was not so strong as it was half an hour afterwards.

Question. What kind of fire was it, artillery or musketry?

Answer. Both. I would call it a moderate fire. I do not think the heavy fire commenced until after 8 o'clock. I think we had fire there from their mortar batteries.

Major GEORGE M. RANDALL, 14th New York heavy artillery, being duly sworn, says to questions by judge advocate:

Question. Were you in or about the crater on the 30th July, and what was your command?

Answer. I was in the crater, and was acting aid to General Ledlie.

Question. In what formation did your division go forward?

Answer. It went forward, as I should judge, by the flank. They did not go forward in solid column, as we expected they would do.

Question. Do you know any reason why they did not?

Answer. No, sir.

Question. Were you near the head of the column? Or were you among the first that got into the crater?

Answer. I was about the second line. I was ordered by General Ledlie to go forward with the advancing column.

Question. Had you an opportunity of observing why the troops halted in the crater?

Answer. Yes, sir. I saw the 14th New York and 2d Pennsylvania heavy artillery pass through the crater and occupy traverses in rear of the fort, and there they remained.

Question. Were efforts made to urge them forward, according to the plan?

Answer. Yes, sir.

Question. And at a time, too, when they were not in disorder?

Answer. They were very much in disorder when they arrived at the crater. That was just the difficulty. If the regiments had been in their proper places when they arrived at the crater, we would have taken the crest of the hill. But they were scattered, and it was impossible to get any of the regiments to-

gether. Colonel Robinson and myself attempted to get them forward, but could not do so.

Question. While this was going on, was there a fire of any account from the enemy?

Answer. No, sir; there was not much when we first advanced in there.

Question. Please to state, in your opinion, what it arose from.

Answer. I cannot tell exactly. I suppose it was because, when the mine exploded, they were so much excited; for when the mine exploded, they hardly knew what they were doing. It appeared to be the opinion of all who were there that immediately after the explosion one good regiment in solid column could have gone forward without any difficulty. But we were in there only a short time when the enemy opened on our right and left.

Question. Was the division commander present during this confusion?

Answer. Not in the crater.

Question. Is it your opinion that this hesitation affected the result of the action?

Answer. Yes, sir.

Question. Do you know whether there were any pioneers with tools or engineer troops with fascines or gabions ready to come forward to crown the crest in the event of your getting up on Cemetery hill?

Answer. I think I saw the 25th Massachusetts, first division, with shovels and spades; I cannot positively say, but I think I saw them there somewhere.

By the court:

Question. To all appearances were the rebels awake and vigilant before and up to the time of the springing of the mine, or were they apparently asleep and unprepared?

Answer. They appeared to be awake. When I was on the first line, the line that General Wilcox's division occupied, shots were continually fired by the enemy from the fort before the mine exploded. They came from the right or left; at least from the immediate vicinity of the fort.

Question. Are you certain they came from the enemy?

Answer. Yes, sir, I am positive of it.

Question. Where was the division commander during the assault?

Answer. He was in rear of the first line, the line occupied by General Wilcox's troops. I carried orders to him, and found him always in rear of the first line, sitting down behind the parapet.

Question. Do you know any reason why General Ledlie was not with his division in front?

Answer. No, sir.

Colonel J. A. MONROE, 1st Rhode Island artillery, being duly sworn, says to questions by judge advocate:

Question. Were you at the assault on the 30th July, and in what capacity did you serve?

Answer. I was there as chief of artillery of the 9th army corps.

Question. What preparations were made, such as making openings for passing field artillery through our line of works, when it should become necessary in the front?

Answer. No such preparations were made to my knowledge.

Question. What preparations were made for unmasking our artillery, such as cutting down the trees and obstructions that were in front?

Answer. No preparations had been made immediately before the explosion. Some had been made weeks before. The trees in front of what is known as the "heavy work" were left standing until the morning of the 30th, directly after the explosion of the mine, when a few of the trees were cut down.

Question. Do you understand that some of the batteries were masked by those trees?

Answer. They were not exactly masked, but the trees obstructed the fire of the batteries.

Question. Were you aware that the 5th corps' artillery was to find its way to the front through openings that were to be made in the 9th corps' front?

Answer. No, sir.

Question. What have you to say about the fire of the enemy's artillery, as to its commencement and its formidableness on that day?

Answer. It was not severe at all at first. Half or three-quarters of an hour after—it might have possibly been an hour—they had a battery firing, which enfiladed our line on the right. That fire came apparently from one or two guns on Cemetery hill.

By the court:

Question. What troops occupied that line?

Answer. I think it was the first division of the 9th corps, which had endeavored to move up towards the crest of Cemetery hill by the way of the Chimneys, where there is another battery. The fire of the enemy's battery on Cemetery hill was not formidable, because the heavy battery of ours kept it almost completely silenced.

Question. Had those trees been removed, could our batteries have played on the enemy's guns on our right of the crater, which were firing across the plain, over which our troops were to charge?

Answer. Yes, sir. They could also have fired upon a battery in the edge of the woods, almost in front of the crater, that was enfilading our line.

Question. What is the reason the trees were not cut down?

Answer. I called General Burnside's attention to it three weeks before. I went to the general the night before the explosion of the mine, and tried to get a large party to cut those trees down, and he said no trees should be cut down until the mine should have exploded. I asked him for a detail, and he gave me eighty men, which were to be set at work immediately after the explosion of the mine. I put them to work, two men to a large tree and one man to a small one, and they commenced cutting, but only a few trees were cut down, the party was so small.

Captain THEODORE GREGG, 45th Pennsylvania volunteers, (9th corps,) being duly sworn, says to questions by judge advocate:

Question. Were you at the assault on the 30th July, and what was your command?

Answer. I was at the assault on the 30th July; my command was the 45th Pennsylvania veteran volunteers, first brigade, second division, 9th army corps.

Question. State briefly what you observed about the operations on that day.

Answer. My regiment was in the intrenchments opposite the rebel fort that was blown up. About half past three o'clock, on the morning of the assault, I received orders from Captain Raymond, aid to Colonel Bliss, commanding the brigade, to leave part of the regiment deployed as skirmishers and go back with the remainder to the edge of the woodlands and form on the right of the 4th Rhode Island, and remain there until further orders. When the explosion took place I was ordered by Captain Peckham, who was also an aid to Colonel Bliss, to follow the 4th Rhode Island. We marched by the flank, left in front, through the covered way. On arriving at our front line of works opposite the crater the order was given to double-quick across the open plain. On arriving in front of the rebel works we found several regiments lying down on the ground, and a great many men killed and wounded. I then received orders to charge across the crater. I gave the command "Face by the right flank," in order to

march in line of battle, and on arriving at the edge of the crater I faced again by the left flank, and marched in single file around and in rear of the crater. The crater was filled with the troops of the first and second divisions of the 9th army corps. General Bartlett, commanding the first brigade, first division, General Griffin, commanding the second brigade, second division, and General Hartrauft, were in the crater. They appeared to be endeavoring to rally the troops for the purpose of charging forward to some buildings, about four hundred yards in the rear of the crater, towards Petersburg, and, I believe, on Cemetery hill. I was ordered by General Bartlett to charge across the plain and secure those buildings, so that we could use them to operate as sharpshooters against the enemy's artillery. At the same time Captain Peckham ordered me to form in line of battle and then charge down in the rear of the enemy's line of rifle-pits on the right—that is, to face by the rear rank and charge the enemy in the rifle-pits on the right. As soon as they should see the colors of the 45th, other regiments of the first brigade, of the second division, were to charge forward. As soon as I had the regiment formed in line I received an order from General Griffin and other officers to charge to the left of the crater, in order to create a diversion in favor of other regiments of the second brigade. The crater was filled with troops.

Question. What troops were they?

Answer. I knew them to be troops of the first and second divisions by seeing General S. G. Griffin and other officers, as well as men whom I had known before. They were very much mixed up, and could not be got forward by their officers. Some officers attempted to rally them and some did not.

Question. Was there any firing at this time?

Answer. There was. The enemy's fire could not reach the men in the crater, but there was heavy firing at this time in front of the crater from field-pieces about those buildings. The enemy also had an enfilading fire of artillery from the fort situated on our left, and from another battery on our left, and at a deep cut in the railroad. I received so many orders from so many different commanders at that time that I did not know which to obey.

Question. Where was your division commander?

Answer. I do not know where he was. I did not see the division commander there at any time during the action. I understood that he was on the ground. He might have been there and, in the confusion, I not have seen him. Neither did I see our brigade commander. General Potter was our division commander, and Colonel Bliss our brigade commander.

Surgeon H. E. SMITH, 27th Michigan volunteers, (9th corps,) being duly sworn, says to questions by judge advocate:

Question. Were you at the assault on the 30th July, and in what capacity?

Answer. I was in charge of the surgeons on the field of the third division, to see that the wounded were attended to and taken to the rear.

Question. Had you an opportunity, on that occasion, of observing any of the military movements?

Answer. Nothing more than seeing troops advance over our breastworks. I was there when the colored troops were ordered to advance, and heard General Burnside's aid give repeated orders to General Ferrero to take his troops up and charge towards Petersburg. I think he gave the order three times. The third order General Burnside sent to General Ferrero was an imperative order to advance. To the previous orders General Ferrero would make the answer, that the other troops were in his way, and he could not possibly advance while they were there, and if they would be taken out of the way he would go ahead.

Question. General Ferrero was present?

Answer. Yes, sir.

Question. Any other generals?

Answer. General Ledlie was present. Those were the only generals I saw.

Question. Did General Ledlie make any reply, that you heard, when this order was given to General Ferrero?

Answer. I did not hear him make any reply, or any statement on the subject of that order from General Burnside.

Question. What troops did you understand General Ferrero to allude to as being in the way?

Answer. I did not understand. I supposed they were those troops that had made the charge. The general was in front of a bomb-proof which had been used as a regimental headquarters, and was situated about 10 or 12 rods, as near as I could judge, in rear of the work. This bomb-proof was fronting to the rear.

Question. Did General Ferrero leave that place and accompany his troops to the front when they left?

Answer. He did. General Ledlie, I think, left the bomb-proof for a very short time. That was about the time of the stampede of the darkeys. Then, I think, both General Ledlie and General Ferrero returned about that time. I am not positive, however, for I was busy seeing that the wounded were being attended to. General Ledlie asked me for stimulants, and said he had the malaria, and was struck with a spent ball. He inquired for General Bartlett, as he wanted to turn the command over to him and go to the rear. It was one of General Bartlett's aids, I believe, who replied that he was in the crater.

Question. You say that during the stampede Generals Ferrero and Ledlie returned to the bomb-proof. How long did they remain there?

Answer. General Ferrero remained a very short time. He was exhausted. I think he came in for the purpose of getting some stimulants, too, and, I think, he went out immediately after I gave him the stimulants. General Ledlie remained some time longer, probably half an hour, I should judge.

Question. You mention stimulants. What were they? hartshorn, materia medica, or what?

Answer. It was rum, I think. I had rum and whiskey there, and I think I gave them rum.

Question. How often did you administer stimulants to those two officers during that day?

Answer. I think that once was the only time. I was not in the bomb-proof all the while that they were there. It was perfectly safe in there, but it might not have been outside. I had to go out to look after the wounded.

Question. Were there any brigade or regimental commanders in the bomb-proof, any commanding officers besides those whom you have named?

Answer. Yes, sir.

Question. Name them.

Answer. There was a colonel commanding a brigade of colored troops, Colonel Siegfried, I believe. He came there after the stampede quieted down a little, after the troops stopped going to the rear. Also Lieutenant Colonel Cutchin, of the 20th Michigan. He came in from the crater, about the middle of the day, to see General Wilcox, to learn if anything could be done to relieve the troops in the crater, as they were suffering very much for water, and also from the artillery fire of the enemy.

Question. What was the reply?

Answer. General Wilcox was not there, sir.

Question. How long did the colonel stay there?

Answer. Half an hour, at least. He was very much exhausted in running over. He said he had come through a very heavy fire, and it was almost certain death to come from the crater to that place.

Brigadier General J. C. CARR, United States volunteers, being duly sworn, says to questions by judge advocate :

Question. Were you at the assault on the 30th of July, and what was your command ?

Answer. Yes, sir, I was at the assault. My command was the first division of the 18th army corps and a portion of a colored division of the one known as Hinck's division of colored troops. I had one brigade of that division.

Question. Had you opportunities of observing the progress of events on that day ? were you in a situation to see things ?

Answer. Nothing but my own command. I took position in the trenches with my command. I relieved the troops of General Burnside's command, the 9th army corps, on the evening before, with the exception that I had one brigade, which I did not put in the front line. I kept that in reserve to fill the vacancy left in our line at the point where the assaulting column was to debouche from our intrenchments.

Question. Could you see the formation of the assaulting column ?

Answer. Yes, sir ; I saw it before it made the assault.

Question. What was the formation ?

Answer. I should judge it was in column of battalions.

Question. Was that the first division ?

Answer. I think it was, sir. It was very dark, not yet daylight in the morning. I left General Burnside's headquarters at twenty minutes after three o'clock, and as I passed going down I could see the column on my left in column of battalions, I should judge. The position I had did not afford me a good opportunity for observing anything but my own immediate command, as I was in the trenches during the engagement, and remained there until 12 o'clock that day.

At about half past 8 o'clock General Turner, of the 10th corps, was ordered to form his division in rear of the intrenchments, and in doing so he found that it would crowd too much on the troops in his front, and that there was no room to get his division in there. He immediately sent for General Ord to come down—I think it was General Ames who called upon General Ord to come down—and see the position of the troops for himself, and he went down to see the position of the troops in the trenches. As General Turner was forming his command, an attempt was made by the troops on my right to charge the rifle-pits. I saw a vacancy, a gap that I thought about four regiments would fill, and assist that line of battle that was going over our breastworks to take those rifle-pits. I immediately took command of part of Turner's division, and ordered them over the line to join the line of troops then advancing, and told them to charge the rifle-pits in their front, which they did. That was about two hundred yards on the right of the crater. After putting those troops in, I stepped back from the intrenchments some ten or fifteen yards towards the covered way, and I had scarcely got back to the lower end of the covered way when the stampede began, and I suppose two thousand troops came back, and I was lifted from my feet by the rushing mass, and carried along with it ten or fifteen yards in the covered way. What staff I had with me assisted me in stopping the crowd in the covered way, and in putting some of them in position in the second line ; some were in the first line. I left General Potter in the covered way.

Question. Was there any good reason that you know of for this retirement of the troops ?

Answer. No, sir.

Question. Did you notice any arrangements that were made for the passage of troops over the parapet and through the abatis of our lines ?

Answer. No, sir. There was no abatis in the front where I was, at least I did not notice any abatis. There was abatis to the right of it ?

Question. If you had moved your troops to the front how would you have

got through our lines? what mode would you have taken to get them through? what formation would you have adopted?

Answer. I should have formed a column of divisions.

Question. Were there intervals made in our line for the passage of such a column?

Answer. I could not say, sir; all I know is what was in my immediate front. I saw that there were no obstructions to prevent troops passing over our intrenchments to the enemy's works. The rifle-pit I speak of was an advanced work of the enemy where they had a thin line of skirmishers; the main line was behind it.

Question. Did the enemy fire from the main line upon your party that took the pits?

Answer. Yes, sir; briskly with musketry. I do not know the exact hour, but I think that it was about half past 8 a. m.

Question. How did those troops of the 10th corps that you took forward pass over the parapet of our line?

Answer. They went over by a flank movement.

Question. How long did those troops of the 10th corps hold the pits that they took?

Answer. Just as long as I was walking about thirty paces. I had just got into the mouth of the covered way when they came back. I saw officers waving their swords on the pits, but they did not stay a great while.

The court then adjourned to meet at ten o'clock on the 5th September.

THIRTEENTH DAY.

HEADQUARTERS SECOND CORPS,
Jones's House, September 5, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, president; Brigadier Generals Ayres and Miles, and Colonel Schriver, judge advocate.

Captain F. U. FARQUHAR, United States engineers, being duly sworn, says to questions by judge advocate:

Question. Were you at the assault on the 30th July, and in what capacity?

Answer. I was present, and was chief engineer on the staff of General Ord, commanding the 18th corps.

Question. Were you in a situation to observe the operations on that day?

Answer. I was a portion of the time, after the smoke cleared away.

Question. Did you witness the explosion of the mine?

Answer. Yes, sir; I saw the explosion of the mine.

Question. Relate what you saw done unusual on such occasions—occasions of assault; state some of the omissions, if any, and the principal causes which conduced to the failure of the assault.

Answer. At or near fifteen minutes before 5 a. m. the explosion of the mine took place. Immediately on the explosion the artillery opened, and, I should judge, three or five minutes afterwards, we heard the cheer of the assaulting party. Nothing could be seen from the time of the opening of the artillery for twenty-five minutes or half an hour, when the smoke commenced to clear away. At the time of the explosion of the mine the general officers in command were in the covered way, in rear of the 14-gun battery, near what are known as "Thomas's Chimneys," I believe. Between half and three-quarters of an hour after the explosion, Lieutenant Colonel Loring, of General Burnside's staff, came from the front, and reported that the troops that were in the crater were lying there, and could not be pushed forward or gotten out of it. It was fully three

quarters of an hour after the explosion of the mine before the enemy opened any artillery, and then not at all severe. At the time of the explosion, Turner's division of the 10th corps, which was under General Ord's command, was lying at or near the mouth of, or entrance to, the covered way on the right of the 14-gun battery. Ames's division of the 18th corps was in rear of that strip of woods which is in rear of the 14-gun battery. Both the covered ways on the right and left of this 14-gun battery were filled with troops of the 9th corps—the negro division being in the left covered way. There seemed to be an unaccountable delay in the advance of the supports to the first assaulting column. I cannot tell the exact time. I did not see the second one go up, but I heard the cheer some time after—how long I cannot recollect. Somewhere between half past six and seven o'clock I went to the front line to which the assaulting columns had started. The ground immediately in front of our salient from which our forces started was favorable for charging over, as the troops were partially protected pretty near all the way up from the left flanking fire by a very small ridge; the men could have passed over easily, and there were very few dead or wounded lying on that space between our line and the crater. The men seemed to be lying in the crater, and on our side of the crater, but no movements seemed to be taking place. I saw General Turner at that time going to the crater. There seemed to be a lack of enthusiasm or spirit in both officers and men. The negro division filed over our parapet and went into the crater by the flank, exposing their whole line as they passed over from our line to the enemy's to the fire from both sides of the crater. At between nine and ten o'clock the cross fire of the enemy in front of the salient had become so severe that hardly a man could pass from our salient to the crater without being hit. At this front line that I went to there seemed to be no person of any authority to meet any emergency that might arise, and in that, in my opinion, lies one of the chief causes of the disaster. The chief causes of failure are, in the first place, that the mine was in the wrong place, because it was in a re-entrant; and in the second, that there was no officer present to make any new dispositions or movements to meet any emergency that might arise. It seemed to me, so far as I could see, that the troops were not ready to move. They were in the covered ways, and so situated that you could not follow the assaulting columns up with the necessary supports. As it was, the assaulting column, if it had gone forward, would be a mile ahead before the supports could get up. I was present when General Turner sent back a note to General Ord, saying that he could not get his troops forward on account of General Burnside's troops being in the way. General Ord then sat down and wrote a letter to General Meade—I believe it was General Meade—telling him that he would advance Turner's division as soon as General Burnside's troops were out of the way. He showed it to General Burnside, who asked him not to send it, for he would have his troops out of the way immediately; but whether he ever sent it or not, I do not know. General Ord then went to the front himself at the time that General Turner said he could not get his troops forward, and found the same state of things existing—that the covered way was filled up with General Burnside's troops going to the front, and that the wounded were being brought to the rear in the same covered way that the troops going forward to fight were going forward in. There was no reason why the troops should move through the covered way at all. From the position of the assaulting columns and the troops fighting, the enemy could not notice troops passing down the slope of the hill without going through the covered way. The colored troops seemed to be well led, and followed their officers with as much enthusiasm as any other troops that day. They seemed to go about two hundred or two hundred and fifty yards to the right of the crater, going towards the enemy's intrenchments. Then there came a halt, and by that time General Turner had got one of his brigades to the front, and he ordered an assault with his brigade. Instead of passing along the edge of the crater as the other troops

had done, which gave them a temptation to lie down, he charged to the right of the crater. It was just then that the negroes came back, and his men were carried back with them. I went to the front immediately after this affair, when I saw General Turner, and he seemed to be very much distressed about it.

Question. State if there were any means taken for crowning the crest if gained—working parties with fascines, gabions, intrenching tools, &c.

Answer. I can speak only with reference to myself. I had my sappers and miners equipped with tools, ready to move with the 18th corps when it should move.

Question. With the ordinary performance of their duties by officers and men, on such occasions, ought not the assault to have been successful?

Answer. It was successful, for the line was carried. It only wanted some person present to tell them what to do afterwards. I think that, had there been any person of authority at the place, even at our own front line, at the salient, to have given directions at the proper time, we had ninety-nine chances in a hundred of being successful in the object expected to be gained. From my own experience I know that it would take you at least three minutes to get to the front through the covered way, because it was so crowded, and three minutes to get back again to where the general was, and then count your time for observation besides; and at that time, when the opposing forces were so close to each other, ten minutes would make a great deal of difference. I think that, with the exception of a lack of enthusiasm, the troops behaved as well as troops ever behaved. What they wanted was handling. Just in front of the crater, in rear of the enemy's line, there was a sort of a redoubt or earth-work upon the hill, from which not a shot was fired. There was not a soul between the crater and that position, and I believe that position was the objective point of the assault. And I think, had the troops been pushed forward properly, the columns following as one column should have followed another, there would have been no difficulty in the place being carried.

Question. Then there were no physical obstacles in the way of our success?

Answer. No, sir.

Question. Is it your opinion that, if we had not had the mine, we would have been more successful?

Answer. No, sir. The mine of itself was a success. The consternation of the enemy in consequence of the explosion of the mine more than compensated for the flanking fire which they opened upon us. But it was three-quarters of an hour before they opened fire.

Question. Were adequate preparations made for the passage of our troops over our parapets and through the abatis?

Answer. There seemed to be room enough at our salient to pass over certainly in regimental front.

Question. Could artillery have passed through?

Answer. No, sir. I saw no place where artillery could have passed through at any point within two hundred or two hundred and fifty feet of the salient. I do not know how practicable it was further to the right or left. Leading up from the hollow to the front, the covered ways were very narrow, not at all adequate to the necessities of the occasion for conveying troops to the front. And there was room enough in that hollow to have massed all the troops under cover of the darkness. Had that been done, as it was not light when the mine should have exploded, they would all have been in the enemy's lines before they could have been much hurt.

Question. Who gave you orders for preparing the fascines, gabions, and intrenching tools, and working parties, in the 18th corps?

Answer. I got them from General Ord. All I had were shovels, spades, picks, and sand-bags.

Question. Did you see General Burnside on that occasion?

Answer. Yes, sir; I saw him quite frequently.

Question. Any of his division and brigade commanders?

Answer. I only noticed one division commander.

Question. Name him.

Answer. General Potter. If the others were there, I did not happen to see them.

There being no more witnesses in attendance the court adjourned, to meet at ten o'clock on 6th September.

FOURTEENTH DAY.

HEADQUARTERS SECOND CORPS,
Jones's House, September 6, 1864.

The court met pursuant to adjournment.

Present : Major General Hancock, president; Brigadier Generals Ayres and Miles; and Colonel Schriver, judge advocate.

The proceedings of the 12th and 13th days were read and approved.

There being no more witnesses* present, the court was cleared.

The record of evidence was referred to, and discussions took place; after which the court adjourned, to meet at ten o'clock a. m. on the 7th September.

FIFTEENTH DAY.

HEADQUARTERS SECOND CORPS,
September 7, 1864.

The court met pursuant to adjournment.

Present : Major General Hancock, president; Brigadier Generals Ayres and Miles; and Colonel Schriver, judge advocate.

Discussion was resumed; and the court then adjourned till ten o'clock on the 8th September.

SIXTEENTH DAY.

HEADQUARTERS SECOND CORPS,
September 8, 1864.

The court met pursuant to adjournment.

Present : Major General Hancock, president; Brigadier Generals Ayres and Miles; and Colonel Schriver, judge advocate.

Lieutenant A. A. SHADD, 43d United States colored troops, being duly sworn, says, to judge advocate's

Question. Were you at the assault on the 30th July, and in what capacity?

Answer. As aide-de-camp to Colonel Siegfried, commanding 1st brigade, 4th division, 9th corps.

Question. Were you in the crater at any time?

Answer. I was.

Question. Were any of your troops there?

Answer. They were—they went in under Colonel Siegfried; they were not all in.

Question. If they halted there, why did they so?

Answer. There were so many troops in before they came; that is one reason.

Question. What efforts were made to push them forward beyond the crater?

* The following named officers, on account of sickness or absence, did not appear as witnesses before the court: Brigadier Generals Ledlie, Turner, and Burnham; Colonel Siegfried; and Lieutenant Colonel Loring and Pleasant.

Answer. The colonel (Bates) of the 30th regiment colored troops led his through; that is the only one I saw go through the crater.

Question. Was Colonel Siegfried present with his troops in the front all the time?

Answer. He was; he came out when the troops did, about 10 to 11 o'clock.

Captain E. T. RAYMOND, 36th Massachusetts volunteers, duly sworn, says to judge advocate's

Question. Were you at the assault on the 30th July, and in what capacity?

Answer. I was, as brigade inspector, 1st brigade, 2d division, 9th corps.

Question. What was your general position on the field on that occasion?

Answer. In the crater a portion of the time; part near the right of our brigade, in our works.

Question. Under whose immediate orders were you serving?

Answer. Colonel Z. R. Bliss, 7th Rhode Island volunteers, commanding the brigade.

Question. Was he with his troops all the time?

Answer. He was. At 7 o'clock we moved down the covered way, from in rear of our batteries, in front of our reserve camp. Three regiments went into the crater; the remainder of the brigade stopped in the works. About eight o'clock I was sent into the crater by Colonel Bliss, to ascertain why the three regiments in front did not charge—he remaining in the works, with four regiments of the brigade. I went, and found the three regiments were formed in the covered way beyond the crater, towards Cemetery hill.

Question. Where did the covered way strike the enemy's pits to the left of the crater?

Answer. Facing their front, it led a little to our right of the crater, tending off a little to the right of Cemetery hill.

Question. What efforts were made to bring up the regiments which were left in the works by their commanders?

Answer. The three regiments which went forward were first to charge, before the rear regiments were to move forward.

Question. With what part of the brigade was Colonel Bliss?

Answer. With the portion that was left behind. He remained with the last regiment, and did not go forward at all, to my knowledge.

The court, after discussion with closed doors, adjourned, to meet at ten o'clock on the 9th September.

SEVENTEENTH DAY.

HEADQUARTERS SECOND CORPS,

September 9, 1864.

The court met pursuant to adjournment.

Present: Major General Hancock, president; Brigadier Generals Ayres and Miles; and Colonel Schriver, judge advocate.

The proceedings of the 14th, 15th, and 16th days were read and approved.

The court, with closed doors, then resumed the discussion of the testimony; and decided on the following finding and opinion:

FINDING.

After mature deliberation on the testimony adduced, the court find the following facts and circumstances attending the unsuccessful assault on the 30th July.

The mine, quite an important feature in the attack, was commenced by Major General Burnside soon after the occupation of his present lines, without any direc-

tions obtained from the headquarters of the army of the Potomac. Although its location—and in this the engineers of the army concur—was not considered by Major General Meade a proper one, it being commanded from both flanks and reverse, the continuance of the work was sanctioned.

It was not the intention of the lieutenant general commanding, or of the major general commanding the army of the Potomac, it is believed, to use the mine in the operations against Petersburg, until it became known that the enemy had withdrawn a large part of his forces to the north side of the James river, when it was thought advantage might be taken of it in an assault. All the Union troops sent north of the James had been recalled in time to participate in the assault, so that the whole of the forces operating in front of Petersburg were disposable.

The mine was ordered to be exploded at 3.30 a. m., but, owing to a defective fuze, it did not take place till 4.45.

The detailed order or plan of operations issued by Major General Meade is in accordance with General Grant's instructions, and was seen and approved by the latter previous to its publication. It is marked K in the appendix.

It is the concurrent testimony that had the order been carried out, success would have attended the attack. Also it is in evidence that General Meade met General Burnside and three of his division commanders the day before the assault, and impressed upon them that the operation was one of *time*; that unless prompt advantage were taken of the explosion of the mine to gain the crest, it would be impossible to get it, or the troops to remain outside of their lines.

That order directed that General Burnside should "form his troops (the 9th corps) for assaulting," and that General Ord, commanding the 18th corps, and General Warren, commanding the 5th corps, should support the assault on the right and left respectively.

Major General Burnside's order (No. 60, appendix) directed Brigadier General Ledlie's division, immediately on the explosion of the mine, to be moved forward and crown the crest known as Cemetery hill. Brigadier General Wilcox was to move his division forward as soon as possible after General Ledlie's, bearing off to the left, and Brigadier General Potter was to follow and go to the right. Brigadier General Ferrero was to move his (colored) division next, and pass over the same ground that General Ledlie's did.

Five minutes after the explosion of the mine General Ledlie's division went forward, and it was followed by those of Generals Wilcox and Potter, though it is in evidence that the latter did not move in the prescribed order, and that they were not formed in a manner to do the duty assigned them.

General Ledlie's division, instead of complying with the order, halted in the crater made by the explosion of the mine, and remained there about an hour, when Major General Meade received the first intimation of the fact through a despatch from Lieutenant Colonel Loring, assistant inspector general of the 9th corps, intended for General Burnside, in which he expressed the fear that the men could not be induced to advance.

This crater was on the enemy's line of works, and was fifty to sixty yards long, twenty yards wide, and twenty to twenty-five feet deep. It was about five hundred yards from the Cemetery crest.

General Burnside was then (5.40 a. m.) ordered to push forward to the crest all his own troops, and to call on General Ord to move forward his troops at once. It is in evidence that when the order was communicated to General Ferrero, commanding the colored division, he said he could not put in his troops until the troops already in front should be moved out of the way. They did go forward, however, after some delay, but only to be driven back, and in their flight to rush impetuously against other troops, destroying their formation and producing disorder.

At 6.10 a. m., inquiry being made of General Burnside if it would be an ad-

vantage for Warren's supporting force to go in at once on the left, the answer was, "There is scarcely room for it in our immediate front." The importance of the utmost promptness and the securing of the crest at once, at all hazards, were urged upon him at 6.50 a. m.

At 7.20 a. m. General Burnside reported to General Meade that he was doing all in his power to push forward the troops, and if possible carry the crest, and also that the main body of General Potter's division was beyond the crater. It does not appear in evidence, however, that they ever got any considerable distance, not exceeding two hundred yards, beyond the crater towards the crest, whence they were driven back immediately. This was also the fate of the few colored troops who got over the enemy's line for a moment.

At 9 o'clock a. m. General Burnside reported many of the 9th and 18th corps were retiring before the enemy, and then was the time to put in the 5th corps. It having just been reported, however, by two staff officers (not General Burnside's) that the attack on the right of the mine had been repulsed and that none of the Union troops were beyond the line of the crater, the commanding general thought differently; and the lieutenant general concurring, General Burnside was directed at 9.50 a. m. to withdraw to his own intrenchments immediately or at a later period, but not to hold the enemy's line any longer than was required to withdraw safely his men. This order brought General Burnside to General Meade's headquarters, where he remonstrated against it, saying by night-fall he could carry the crest. No other officer who was present, and who has testified before the court, concurred in this opinion. The troops in the crater were then ordered to retire, but before it could be effected they were driven out with great loss, at two o'clock p. m. These troops, however, were making preparations to retire, and but for that would probably not have been driven out at that time.

The 5th corps did not participate at all in the assault, and General Ord's command only partially, because the condition of affairs at no time admitted of their co-operation, as was contemplated by the plan of assault.

The causes of failure are—

1. The injudicious formation of the troops in going forward, the movement being mainly by flank instead of extended front. General Meade's order indicated that columns of assault should be employed to take Cemetery hill, and that proper passages should be prepared for those columns. It is the opinion of the court that there were no proper columns of assault. The troops should have been formed in the open ground in front of the point of attack parallel to the line of the enemy's works. The evidence shows that one or more columns might have passed over at, and to the left of the crater without any previous preparation of the ground.

2. The halting of the troops in the crater instead of going forward to the crest, when there was no fire of any consequence from the enemy.

3. No proper employment of engineer officers and working parties, and of materials and tools for their use, in the 9th corps.

4. That some parts of the assaulting columns were not properly led.

5. The want of a competent common head at the scene of the assault, to direct affairs as occurrences should demand.

Had not failure ensued from the above causes and the crest been gained, the success might have been jeopardized by the failure to have prepared in season proper and adequate debouches through the 9th corps' lines for troops, and especially for field artillery, as ordered by Major General Meade.

The reasons why the attack ought to have been successful are:

1. The evident surprise of the enemy at the time of the explosion of the mine, and for some time after.

2. The comparatively small force in the enemy's works.

3. The ineffective fire of the enemy's artillery and musketry, there being scarcely any for about thirty minutes after the explosion, and our artillery being just the reverse as to time and power.

4. The fact that some of our troops were able to get two hundred yards beyond the crater towards the crest, but could not remain there or proceed further for want of supports, or because they were not properly formed or led.

OPINION.

The court having given a brief narrative of the assault, and "the facts and circumstances attending it," it remains to report that the following named officers engaged therein appear, from the evidence, to be "answerable for the want of success" which should have resulted :

I. Major General *A. E. Burnside*, United States volunteers, he having failed to obey the orders of the commanding general—

1. In not giving such formation to his assaulting column as to insure a reasonable prospect of success ;

2. In not preparing his parapets and abatis for the passage of the columns of assault ;

3. In not employing engineer officers who reported to him to lead the assaulting columns with working parties, and not causing to be provided proper materials necessary for crowning the crest when the assaulting columns should arrive there ;

4. In neglecting to execute Major General Meade's orders, respecting the prompt advance of General Ledlie's troops from the crater to the crest ; or, in default of accomplishing that, not causing those troops to fall back and give place to other troops more willing and equal to the task, instead of delaying until the opportunity passed away, thus affording time for the enemy to recover from his surprise, concentrate his fire, and bring his troops to operate against the Union troops assembled uselessly in the crater.

Notwithstanding the failure to comply with orders, and to apply proper military principles, ascribed to General Burnside, the court is satisfied he believed that the measures taken by him would insure success.

II. Brigadier General *J. H. Ledlie*, United States volunteers, he having failed to push forward his division promptly according to orders, and thereby blocking up the avenue which was designed for the passage of troops ordered to follow and support his in the assault. It is in evidence that no commander reported to General Burnside that his troops could not be got forward, which the court regard as a neglect of duty on the part of General Ledlie, inasmuch as a timely report of the misbehavior might have enabled General Burnside, commanding the assault, to have made other arrangements for prosecuting it before it became too late. Instead of being with his division during this difficulty in the crater, and by his personal efforts endeavoring to lead his troops forward, he was most of the time in a bomb-proof, ten rods in rear of the main line of the 9th corps works, where it was impossible for him to see anything of the movements of troops that was going on.

III. Brigadier General *Edward Ferrero*, United States Volunteers—

1. For not having all his troops found ready for the attack at the prescribed time.

2. Not going forward with them to the attack.

3. Being in a bomb-proof habitually, where he could not see the operation of his troops, showing by his own order issued, while there, that he did not know the position of two brigades of his division, or whether they had taken Cemetery hill or not.

IV. Colonel Z. R. Bliss, 7th Rhode Island volunteers, commanding 1st brigade, 2d division, 9th corps—

In this: that he remained behind with the only regiment of his brigade which did not go forward according to the orders, and occupied a position where he could not properly command a brigade, which formed a portion of an assaulting column, and where he could not see what was going on.

V. Brigadier General O. B. Wilcox, United States volunteers—

The court are not satisfied that General Wilcox's division made efforts commensurate with the occasion to carry out General Burnside's order to advance to Cemetery hill, and they think that more energy might have been exercised by Brigadier General Wilcox to cause his troops to go forward to that point.

Without intending to convey the impression that there was any disinclination on the part of the commanders of the supports to heartily co-operate in the attack on the 30th day of July, the court express their opinion that explicit orders should have been given assigning one officer to the command of all the troops intended to engage in the assault when the commanding general was not present in person to witness the operations.

WINFIELD S. HANCOCK, Major General U. S. Vols.,

President of Court.

EDWARD SCHRIVER, Inspector General, U. S. A.,

Judge Advocate.

The court then adjourned *sine die*.

WINFIELD S. HANCOCK, Major General U. S. Vols.,

President of Court.

EDWARD SCHRIVER, Inspector General, U. S. A.,

Judge Advocate.

APPENDIX TO THE RECORD OF THE COURT OF INQUIRY.

APPENDIX A.

Despatches from Major General Meade to Lieutenant General Grant, July 24, 26, and 28, 1864, and from General Grant to General Meade, July 24, 26, 28, 29th, and August 1, 1864.

A.

HEADQUARTERS ARMIES OF THE UNITED STATES,

City Point, Va., July 24, 1864.

GENERAL: The engineer officers who made a survey of the front from Bermuda Hundred report against the probability of success from an attack there; the chances they think will be better on Burnside's front. If this is attempted, it will be necessary to concentrate all the force possible at the point in the enemy's line we expect to penetrate. All officers should be fully impressed of the absolute necessity of pushing entirely beyond the enemy's present line, if they should succeed in penetrating it, and of getting back to their present line promptly, if they should not succeed in breaking through.

To the right and left of the point of assault, all the artillery possible should be brought to play upon the enemy in front during the assault. Thin lines would be sufficient for the support of the artillery, and all the reserves could be brought on the flank of their commands nearest to the point of assault, ready to follow in if successful. The field artillery and infantry held in the lines during the first assault should be in readiness to move at a moment's notice, either to their front or to follow the main assault, as they should receive orders. One thing, however, should be impressed on corps commanders: if they see the enemy giving way in

their front, or moving from it to re-enforce a heavily assaulted position of their line, they should take advantage of such knowledge, and act promptly without waiting for orders from their army commander.

General Ord can co-operate with his corps in this movement, and about five thousand troops from Bermuda Hundred can be sent to re-enforce you, or can be used to threaten an assault between the Appomattox and James rivers, as may be deemed best.

This should be done by Tuesday morning, if done at all. If not attempted, we will then start at the date indicated to destroy the railroad as far as Hicksford, at least, and to Weldon, if possible.

Please give me your views on this matter, and I will order at once. In this I have said nothing of the part to be taken by the cavalry, in case the enemy's lines are assaulted. The best disposition to be made of them probably would be to place them on the extreme left, with instructions to skirmish with the enemy and drive him back if possible, following up any success gained in that way according to the judgment of the commander, or orders he may receive.

Whether we send an expedition on the railroad, or assault at Petersburg, Burnside's mine will be blown up.

As it is impossible to hide preparations from our own officers and men, and consequently from the enemy, it will be well to have it understood as far as possible that just the reverse of what we intend is in contemplation.

I am, general, very respectfully, &c.,

U. S. GRANT,
Lieutenant General.

Major General GEORGE G. MEADE, *Commanding Army of the Potomac.*

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

B.

HEADQUARTERS ARMY OF THE POTOMAC,
July 24, 1864.

GENERAL : I have received your letter per Lieutenant Colonel Comstock. In reply thereto, I have to state that I yesterday made in person a close and careful reconnoissance of the enemy's position in my front. Although I could not detect any positive indications of a second line, yet, from certain appearances at various points, I became satisfied that a second line does exist on the crest of the ridge, just in rear of the position of Burnside's mine. I have no doubt of the successful explosion of the mine, and of our ability to crown the crater, effect a lodgement, and compel the evacuation of the enemy's present occupied line; but from their redoubt on the Jerusalem plank road, and from their position in front of the Hare house, their artillery fire would render our lodgement untenable, and compel our advance or withdrawal.

The advance, of course, should be made, but its success would depend on the question whether the enemy have a line on the crest of the ridge. If they have, with the artillery fire they can bring to bear on the approaches to this second hill, I do not deem it practicable to carry the line by assault; and from my examination, together with the evident necessity of their having such a line, I am forced to believe we shall find one there.

I cannot, therefore, advise the attempt being made; but should it be deemed expedient to take the risks, and there is undoubtedly room for doubt, I would like a little more time than is given in your note in order to place in position the maximum amount of artillery to bear upon the lines not assaulted. In reference to the assaulting force, it will be composed of the 9th and 2d corps.

The 5th corps will have to remain in their present position, and be prepared

to meet any attempt of the enemy to turn our left flank, which is not altogether unlikely, particularly if we should fail in our assault, and be compelled to withdraw.

I am fully impressed with the importance of taking some immediate action, and am satisfied that, excepting regular approaches, the springing of Burnside's mine and subsequent assault is the most practicable, and I am not prepared to say the attempt would be *hopeless*. I am, however, of the opinion, so far as I can judge, that the chances of its success are not such as to make it expedient to attempt it.

Very respectfully, yours,

GEORGE G. MEADE,
Maj. Gen'l Com'dg.

Lieutenant General U. S. GRANT.

P. S.—I enclose you a report of Major Duane, which confirms my views; if Wright is soon to return, and we can extend our lines to the Weldon railroad, we could then advance against the salient on the Jerusalem plank road, and make an attempt to carry them at the same time we assaulted in Burnside's front.

This was my idea some time ago, and we have been preparing the necessary siege works for this purpose. Under your instructions, however, none of the heavy guns and material have been brought to the front, and it would take, perhaps, two days to get them up.

G. G. M.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

B. 2.

HEADQUARTERS ARMY OF THE POTOMAC,
Office of Chief Engineer, July 24, 1864.

GENERAL: In reply to your communication of this date, I have the honor to state that the line of the enemy's works in front of General Burnside is not situated on the crest of the ridge separating us from Petersburg. That the enemy have undoubtedly occupied this ridge as a second line.

Should General Burnside succeed in exploding his mine, he would probably be able to take the enemy's first line, which is about one hundred yards in advance of his approach. Beyond this I do not think he could advance until the works in front of the fifth corps are carried, as the ninth corps columns would be taken in flank by a heavy artillery fire from works in front of the centre of the fifth corps, and in front by fire from the works on the crest near the Cemetery hill. I do not believe that the works in front of the 5th corps can be carried until our lines can be extended to the left so as to envelop the enemy's line.

Very respectfully, your obedient servant,

J. C. DUANE,
Major Engineers, United States Army.

Major General MEADE, *Commanding Army of the Potomac.*

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

C.

HEADQUARTERS ARMIKS OF THE UNITED STATES,
City Point, July 24, 1864.

GENERAL: Your note brought by Colonel Comstock is received. It will be necessary to act without expecting Wright. He is now in Washington; but it is not fully assured yet that Early has left the valley, and if Wright was to start back no doubt the Maryland raid would be repeated. I am not willing to attempt a movement so hazardous as the one against intrenched lines, against the judgment of yourself and your engineer officers, and arrived at after a more careful survey of the ground than I have given it. I will let you know, however, in the morning what determination I come to.

Very respectfully, your obedient servant,

U. S. GRANT,
Lieutenant General.

Major General MEADE,
Commanding Army of the Potomac.

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

D.

HEADQUARTERS ARMY OF THE POTOMAC,
12 m., July 26, 1864.

Lieutenant General U. S. GRANT:

More critical examinations from a new signal station would lead to the conclusion that the enemy have detached works on the ridge in front of Burnside, but they have no connected line. This fact increases the chances of a successful assault; and, taken in connexion with the fact that General Burnside does not now think the enemy have discovered his mine; on the contrary, believes they are laying the platform for a battery right over it.

I have suspended the order to load and discharge it to-morrow, as it may yet be useful in connexion with further operations.

I am afraid the appearance of McLaw's division, together with Wilcox's, previously reported, will prevent any chance of a surprise on the part of our people to-morrow. Yesterday's Richmond Examiner also says your strategic movements are known, and preparations made to meet them, referring, I presume, to Foster's operations.

There was considerable shelling by the enemy yesterday afternoon all along our lines, brought on, I think, by Burnside discovering a camp he had not before seen and ordering it shelled. No serious casualties were produced on our side, but the 5th corps working parties were very much annoyed and interrupted. With this exception, all was quiet.

GEO. G. MEADE,
Major General.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

E.

[Cipher.]

UNITED STATES MILITARY TELEGRAPH,

By telegraph from City Point, 3 p. m., dated July 26, 1864.

Major General MEADE :

The information you have just sent, and all information received on the subject, indicates a probability that the enemy are looking for a formidable attack either from General Burnside or north of the James river, and that they will detach from Petersburg heavily to prevent its success. This will make your remaining two corps, with the 18th, relatively stronger against the enemy at Petersburg than we have been since the first day. It will be well, therefore, to prepare for an assault in General Burnside's front, only to be made if further development justifies it. If made, it would be necessary to abandon most of the front now held by the 5th corps.

U. S. GRANT,
Lieutenant General.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

F.

HEADQUARTERS ARMY OF THE POTOMAC,

5.30 p. m., July 26, 1864.

Lieutenant General U. S. GRANT :

Telegram 3 p. m. received. The only preparation that can be made is the loading of Burnside's mine. I cannot advise an assault with the 2d corps absent, for some force must be left to hold our lines and protect our batteries.

The withdrawal of the 5th corps would prevent any attempt on our part to silence the fire of the enemy's guns in front of the 5th corps, and unless these guns are silenced no advance can be made across the open ground in front of the 9th corps.

It is not the numbers of the enemy which oppose our taking Petersburg; it is their artillery and their works, which can be held by reduced numbers against direct assault.

I have just sent you a despatch indicating an attack on my left flank by the enemy. This is my weak point, and a formidable attack turning my flank would require all my force to meet successfully.

GEO. G. MEADE, *Major General.*

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

G.

UNITED STATES MILITARY TELEGRAPH,

By telegraph from City Point, 12.20 p. m., dated July 28, 1864.

Major General MEADE :

Your despatch of 12 m. received. Unless something turns up north of the James between this and night that I do not expect, you may withdraw Hancock,

to be followed by Sheridan, and make arrangements for assault as soon as it can be made. We can determine by the movements of the enemy before the time comes whether it will be advisable to go on with the assault. I will put in the 18th corps, or not, as you deem best.

U. S. GRANT, *Lieutenant General*.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

H.

HEADQUARTERS ARMY OF THE POTOMAC,
1 p. m., July 28, 1864.

Lieutenant General GRANT :

Your despatch of 12.20 received. On reflection, I think daylight of the 30th is the earliest time it would be advisable to make the assault. Besides the time required to get up heavy guns and mortars, we require the night to make certain preliminary arrangements, such as massing troops, removing abatis from the debouch of the assaulting column, &c. I shall make the assault with the 9th corps, supported by the 2d. The reserves of the 18th should be held in readiness to take part, and if developments justify it, all of Ord's and Warren's commands can be put in.

GEO. G. MEADE, *Major General*.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

I.

HEADQUARTERS ARMIES OF THE UNITED STATES,
City Point, Va., July 29, 1864.

GENERAL : I have directed General Butler to order General Ord to report to you for the attack on Petersburg. The details for the assault I leave for you to make out.

I directed General Sheridan, whilst we were at Deep Bottom last evening, to move his command immediately to the left of Warren from Deep Bottom. It will be well to direct the cavalry to endeavor to get round the enemy's right flank, whilst they will not probably succeed in turning the enemy, they will detain a large force to prevent it. I will go out this evening to see you ; will be at your headquarters about 4 p. m.

Very respectfully, your obedient servant,

U. S. GRANT, *Lieutenant General*.

Major General GEO. G. MEADE,
Commanding Army of the Potomac.

P. S.—If you want to be at any place on the line at the hour indicated, inform me by telegraph, and I will meet you wherever you may be.

U. S. G.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

J.

[Cipher, received 11.40 a. m.]

By telegraph from City Point, 9.30 a. m., dated August 1, 1864.

Major General MEADE :

Have you any estimate of our losses in the miserable failure of Saturday? I think there will have to be an investigation of the matter. So fair an opportunity will probably never occur again for carrying fortifications; preparations were good, orders ample, and everything, so far as I could see subsequent to the explosion of the mine, shows that almost without loss the crest beyond the mine could have been carried; this would have given us Petersburg, with all its artillery and a large part of the garrison, beyond doubt. An intercepted despatch states that the enemy recaptured their line, with General Bartlett and staff, seventy-five commissioned officers, and nine hundred rank and file, and recaptured five hundred of their men.

U. S. GRANT,
Lieutenant General.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

APPENDIX B.

Order of the Major General commanding, for the movement against the enemy's position, July 30, 1864.

K.

ORDERS.]

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864.

The following instructions are issued for the guidance of all concerned :

1. As soon as it is dark, Major General Burnside, commanding 9th corps, will withdraw his two brigades, under General White, occupying the intrenchments between the plank and Norfolk roads, and bring them to his front. Care will be taken not to interfere with the troops of the 18th corps moving into their position in rear of the 9th corps. General Burnside will form his troops for assaulting the enemy's works at daylight of the 30th, prepare his parapets and abatis for the passage of the columns, and have the pioneers equipped for work in opening passages for artillery, destroying enemy's abatis, &c., and the intrenching tools distributed for effecting lodgements, &c.

2. Major General Warren, commanding 5th corps, will reduce the number of his troops holding the intrenchments of his front to the minimum, and concentrate all his available forces on his right, and hold them prepared to support the assault of Major General Burnside. The preparations in respect to pioneers, intrenching tools, &c., enjoined upon the 9th corps, will also be made by the 5th corps.

3. As soon as it is dark, Major General Ord, commanding 18th corps, will relieve his troops in the trenches by General Mott's division of the 2d corps, and form his corps in rear of the 9th corps, and be prepared to support the assault of Major General Burnside.

4. Every preparation will be made for moving forward the field artillery of each corps.

5. At dark, Major General Hancock, commanding 2d corps, will move from

Deep Bottom to the rear of the intrenchments now held by the 18th corps, resume the command of Mott's division, and be prepared at daylight to follow up the assaulting and supporting columns, or for such other operations as may be found necessary.

6. Major General Sheridan, commanding cavalry corps, will proceed at dark from the vicinity of Deep Bottom to Lee's Mill, and at daylight will move with his whole corps, including Wilson's division, against the enemy's troops defending Petersburg, on their right, by the roads leading to that town from the southward and westward.

7. Major Duane, acting chief engineer, will have the pontoon trains parked at convenient points in the rear, prepared to move. He will see that supplies of sand-bags, gabions, fascines, &c., are in depot near the lines, ready for use.

He will detail engineer officers for each corps.

8. At half past three in the morning of the 30th Major General Burnside will spring his mine, and his assaulting columns will immediately move rapidly upon the breach, seize the crest in the rear, and effect a lodgement there. He will be followed by Major General Ord, who will support him on the right, directing his movement to the crest indicated, and by Major General Warren, who will support him on the left.

Upon the explosion of the mine, the artillery of all kinds in battery will open upon those points of the enemy's works whose fire covers the ground over which our columns must move, care being taken to avoid impeding the progress of our troops.

Special instructions respecting the direction of fire will be issued through the chief of artillery.

9. Corps commanders will report to the commanding general when their preparations are complete, and will advise him of every step in the progress of the operations, and of everything important that occurs.

10. Promptitude, rapidity of execution, and cordial co-operation are essential to success, and the commanding general is confident that this indication of his expectations will insure the hearty efforts of the commanders and troops.

11. Headquarters during the operations will be at the headquarters of the 9th corps.

By command of Major General Meade.

S. WILLIAMS,
Ass't Adj't Gen'l.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

APPENDIX C.

Despatches from Major General Meade to Major General Burnside, commanding 9th army corps, and from Major General Burnside to Major General Meade, July 26, 29, 30, and 31, 1864; also despatches from General Meade to Captain Sanders, A. D. C., and from Captain Sanders to General Meade, July 30, 1864; also despatches from Lieutenant Colonel Comstock, A. D. C., to Lieutenant General Grant, July 30, 1864.

L.

HEADQUARTERS NINTH ARMY CORPS,
July 26, 1864.

GENERAL: I have the honor to acknowledge the receipt of your notes of this morning by Captains Jay and Bache, also of a telegram from the commanding general relating to the same subject.

It is altogether probable that the enemy are cognizant of the fact that we are mining, because it has been mentioned in their newspapers, and they have been heard to work on what are supposed to be shafts in close proximity to our galleries; but the rain of night before last no doubt filled their shafts and much retarded their work. We have heard no sounds of work in them either yesterday or to-day, and nothing is heard by us in the mine but the usual sounds of work on the surface above. This morning we had some apprehensions that the left lateral gallery was in danger of caving in from the weight of the batteries above it and the shock of their firing; but all possible precautions have been taken to strengthen it, and we hope to preserve it intact. The placing of the charges in the mine will not involve the necessity of making a noise. It is therefore probable that we will escape discovery, if the mine is to be used within two or three days. It is, nevertheless, highly important, in my opinion, that the mine should be exploded at the earliest possible moment consistent with the general interest of the campaign. I state to you the facts as nearly as I can; and, in the absence of any knowledge as to the meditated movements of the army, I must leave you to judge the proper time to make use of the mine; but it may not be improper for me to say that the advantages reaped from the work would be but small if it were exploded without any co-operative movements.

My plan would be to explode the mine just before daylight in the morning, or about five o'clock in the afternoon; mass the two brigades of the colored division in rear of my line in columns of divisions—double columns closed in mass; the head of each brigade resting on the front line, and as soon as the explosion has taken place move them forward, with instructions for the divisions to take half-distance; and as soon as the leading regiments of the two brigades pass through the gap in the enemy's line, the leading regiment of the right brigade to come into line perpendicular to the enemy's line by the right companies on the right into line wheel, "the left companies on the right into line," and proceed at once down the line of the enemy's work as rapidly as possible; the leading regiment of the left brigade to execute the reverse movement to the left, moving up the enemy's line; the remainders of the two columns to move directly towards the crest in front as rapidly as possible, diverging in such a way as to enable them to deploy into columns of regiments, the right column making as nearly as may be for Cemetery hill; these columns to be followed by the other divisions of this corps as soon as they can be thrown in; this would involve the necessity of relieving these divisions by other troops before the movement, and of holding columns of other troops in readiness to take our place on the crest, in case we gain it and sweep down it. It would be advisable, in my opinion, if we succeed in gaining the crest, to throw the colored division right into the town. There is a necessity for the co-operation, at least in the way of artillery, of the troops on my right and left; of the extent of this you will necessarily be the judge. I think our chances of success in a plan of this kind are more than even. The main gallery of the mine is five hundred and twenty-two (522) feet in length; the side galleries, about forty (40) feet each. My suggestion is, that eight magazines be placed in the lateral galleries—two at each end, say a few feet apart, in branches at right angles to the side galleries; and two more in each of the side galleries, similarly placed, situated by pairs, equidistant from each other and the end of the galleries.

[See diagram, page 16.]

Tamping beginning at the termination of the main gallery for, say, one hundred feet, leaving all the air space in the side galleries. Run out some five or six fuzes, and two wires, to render the ignition of the charge certain. I propose to put in each of the eight magazines from twelve to fourteen hundred pounds of powder, the magazines to be connected by a trough of powder instead of a fuze.

I beg to enclose a copy of a statement from General Potter on the subject. I would suggest that the powder train be parked in a wood near our ammunition train, about a mile in rear of this place. Lieutenant Colonel Perrie, chief quartermaster, will furnish Captain Strang with a guide to the place.

I beg also to request that General Benham be instructed to send us, at once, eight thousand (8,000) sand-bags, to be used for tamping and other purposes.

I have the honor to be, general, very respectfully, your obedient servant,
A. E. BURNSIDE,
Major General Commanding.

Major General HUMPHREYS,
Chief of Staff.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

M.

HEADQUARTERS ARMY OF THE POTOMAC,
10½ a. m., July 29, 1864.

Major General BURNSIDE, *Commanding 9th Corps :*

I am instructed to say that the major general commanding submitted to the lieutenant general commanding the armies your proposition to form the leading columns of assault of the black troops, and that he, as well as the major general commanding, does not approve the proposition, but directs that these columns be formed of the white troops.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :



S. WILLIAMS,
Ass't Adj't Gen'l.

M 1.

HEADQUARTERS ARMY OF THE POTOMAC,
July 26, 12 m., 1864.

Major General BURNSIDE :

I wish you would submit in writing your project for the explosion of your mine with the amount of powder required, that the preliminary questions may be definitely settled. You had better also look for some secure place in the woods, where the powder required can be brought in wagons, and kept under guard ; thus saving the time it will take to unload it from the vessels and haul it to your camp. Whenever you report as above, and designate a point, I will order the powder brought up.

GEO. G. MEADE,
Major General.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

M 2.

HEADQUARTERS ARMY OF THE POTOMAC,

July 26, 1864.

Major General BURNSIDE, *Commanding 9th Corps* :

GENERAL: The major general commanding directs me to inquire whether anything has transpired connected with your mine that leads you to believe it is in danger from countermining. If it is your conviction that it is so endangered, then the commanding general authorizes you to make every preparation for springing it; but directs that you do not explode it earlier than to-morrow afternoon, Wednesday, the 27th, say at four o'clock, if not otherwise ordered. The commanding general further directs me to say that the charge of the mine should be determined by the usual rules governing such subjects. It is not intended by the commanding general to follow up the explosion of the mine by an assault or other operations. If, therefore, the mine can be preserved for use at some early future day, when circumstances will admit of its being used in connexion with other operations, the commanding general desires that you take no steps for exploding it as herein prescribed.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official :

S. WILLIAMS,

Ass't Adj't Gen'l.

N.

HEADQUARTERS ARMY OF THE POTOMAC,

July 29, 9 $\frac{3}{4}$ p. m., 1864.Major General BURNSIDE, *Commanding 9th Corps* :

A despatch from General Ord refers to the late hour at which his troops will relieve yours in the trenches. The commanding general has informed General Ord that it is not necessary for you to wait for your troops to be relieved in the trenches by General Ord before forming them for the assault. They should be formed for the assault at the hour you deem best, without any reference to General Ord's troops, who will enter the vacated trenches as soon as they can.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official :

S. WILLIAMS,

Ass't Adj't Gen'l.

O.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—3.20 a. m.

Major General BURNSIDE :

As it is still so dark, the commanding general says you can postpone firing the mine if you think proper.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official :

S. WILLIAMS,

Ass't Adj't Gen'l.

P.

BY TELEGRAPH FROM NINTH ARMY CORPS,
Dated July 30, 1864—3.20 a. m.

Major General HUMPHREYS:

The mine will be fired at the time designated. My headquarters will be at the 14-gun battery.

A. E. BURNSIDE,
Major General.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

Q.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—4½ a. m.

Major General BURNSIDE:

Is there any difficulty in exploding the mine? It is now three-quarters of an hour later than that fixed upon for exploding it.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

R.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864.

OPERATOR at General Burnside's field headquarters:

Is General Burnside at his headquarters? The commanding general is anxious to learn what is the cause of delay.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

S.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 4.29 a. m., 1864.

Major General BURNSIDE:

If the mine cannot be exploded, something else must be done, and at once. The commanding general is awaiting to hear from you before determining.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

T.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 4.35 a. m., 1864.

Major General BURNSIDE, *Commanding 9th Corps*:

The commanding general directs that, if your mine has failed, you make an assault at once, opening your batteries.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

U.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—5.40 a. m.

Major General BURNSIDE:

What news from your assaulting column? Please report frequently.

GEO. G. MEADE,
Major General.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

V.

BY TELEGRAM FROM BATTERY MORTON,

5.40 a. m., dated July 30, 1864.

General MEADE:

We have the enemy's first line and occupy the breach. I shall endeavor to push forward to the crest as rapidly as possible.

A. E. BURNSIDE,
Major General.

P. S.—There is a large fire in Petersburg.

W. W. SANDERS,
Captain and A. D. C.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

W.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—5.40 a. m.

Major General BURNSIDE, *Commanding 9th Corps*:

The commanding general learns that your troops are halting at the works where the mine exploded. He directs that all your troops be pushed forward to the crest at once. Call on General Ord to move forward his troops at once.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

X.

BY TELEGRAPH FROM HEADQUARTERS, 14-GUN BATTERY,
July 30, 1864—5.50 a. m.

Major General MEADE:

The 18th corps has just been ordered to push forward to the crest. The loss does not appear to be heavy. Prisoners coming in.

W. W. SANDERS,
Captain and C. M.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

Y.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—6 a. m.

Major General BURNSIDE:

Prisoners taken say there is no line in their rear, and that their men were falling back when ours advanced; that none of their troops have returned from the James. Our chance is now. Push your men forward at all hazards—white and black—and don't lose time in making formations, but rush for the crest.

GEO. G. MEADE,
Major General Commanding.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

Z.

BY TELEGRAPH FROM HEADQUARTERS, 14-GUN BATTERY,
July 30, 1864—6.10 a. m.

General MEADE:

General Burnside says that he has given orders to all his division commanders to push everything in at once.

W. W. SANDERS,
Captain and C. M.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 1.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 6.05 a. m., 1864.

Major General BURNSIDE, *Commanding 9th Corps:*

The commanding general wishes to know what is going on on your left, and whether it would be an advantage for Warren's supporting force to go in at once.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 2.

[Telegraph from headquarters 9th corps.]

Dated July 30, 6.20 a. m., 1864.

Major General MEADE:

If General Warren's supporting force can be concentrated just now, ready to go in at the proper time, it would be well. I will designate to you when it ought to move. There is scarcely room for it now in our immediate front.

A. E. BURNSIDE,

Major General.

Official:

S. WILLIAMS,

Ass't Adj't Gen'l.

No. 3.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 6.50 a. m., 1864.

Major General BURNSIDE:

Warren's force has been concentrated and ready to move since 3.30 a. m. My object in inquiring was to ascertain if you could judge of the practicability of his advancing without waiting for your column. What is the delay in your column moving? Every minute is most precious, as the enemy undoubtedly are concentrating to meet you on the crest, and if you give them time enough, you cannot expect to succeed. There is no object to be gained in occupying the enemy's line. It cannot be held under their artillery fire without much labor in turning it. The great point is to secure the crest at once, and at all hazards.

GEO. G. MEADE,

Major General.

Official:

S. WILLIAMS,

Ass't Adj't Gen'l.

No. 4.

[By telegraph from 5th army corps.]

JULY 30, 7 a. m., 1864.

Lieut. General GRANT:

Several regiments of Burnside's men are lying in front of the crater, apparently, of the mine. In their rear is to be seen a line of battle of a brigade or more, under cover, and I think between the enemy's line and ours. The volley firing half ($\frac{1}{2}$) hour ago was from the enemy's works in Warren's front.

C. B. COMSTOCK,

Lieutenant Colonel.

Official:

S. WILLIAMS,

Ass't Adj't Gen'l.

No. 5.

[Telegraph from headquarters 9th corps.]

Received about 7.20 a. m., July 30, 1864.

General MEADE :

I am doing all in my power to push the troops forward, and, if possible, we will carry the crest. It is hard work, but we hope to accomplish it. I am fully alive to the importance of it.

A. E. BURNSIDE,
Major General.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 6.

HEADQUARTERS ARMY OF THE POTOMAC,
7.30 a. m., July 30, 1864.

Major General BURNSIDE :

What do you mean by hard work to take the crest? I understand not a man has advanced beyond the enemy's line which you occupied immediately after exploding the mine. Do you mean to say your officers and men will not obey your orders to advance? If not, what is the obstacle? I wish to know the truth and desire an immediate answer.

GEO. G. MEADE,
Major General.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 7.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 8 a. m., 1864.

Major General BURNSIDE :

Since writing by Captain Jay, Captain Sanders has come in and reported condition of affairs. He says Griffin has advanced and been checked; this modifies my despatch. Still I should like to know the exact morale of your corps. Ord reports he cannot move till you get out of the way. Can't you let him pass out on your right, and let him try what he can do?

GEO. G. MEADE,
Major General.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 8.

HEADQUARTERS 9TH CORPS, BATTERY MORTON,
About 7.35 a. m., July 30, 1864.

General MEADE:

Your despatch by Captain Jay received. The main body of General Potter's division is beyond the crater. I do not mean to say that my officers and men will not obey my orders to advance; I mean to say that it is very hard to advance to the crest.

I have never in any report said anything different from what I conceived to be the truth; were it not insubordinate, I would say that the latter remark of your note was unofficerlike and ungentlemanly.

Respectfully, yours,

A. E. BURNSIDE, *Major General.*

Official:

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 9.

[By telegraph from 5th army corps.]

HEADQUARTERS ARMY OF THE POTOMAC,
8 a. m., July 30, 1864.

Lieutenant General GRANT:

About a brigade more of our men has moved up to the crater, and then filed off to the right along the enemy's line; they are still moving to the right.

C. B. COMSTOCK,

Lieutenant Colonel and Aide-de-Camp.

Official:

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 10.

[By telegraph from headquarters 9th army corps.]

8.45 a. m., July 30, 1864.

General MEADE:

One gun has just been taken out of the mine, and is now being put in position. Have not heard anything from the attack made from the left of mine. One (1) set of colors just sent in, captured by the negroes.

W. W. SANDERS,

Captain and C. M.

Official:

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 11.

[By telegraph from headquarters 9th army corps.]

9 a. m., July 30, 1864.

General MEADE:

Many of the ninth (9th) and eighteenth (18th) corps are retiring before the enemy. I think now is the time to put in the fifth (5th) corps promptly.

A. E. BURNSIDE,

Major General.

Official:

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 12.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—9.30 a. m.

Major General BURNSIDE, *Commanding 9th Corps* :

The major general commanding has heard that the result of your attack has been a repulse, and directs that if, in your judgment, nothing further can be effected, that you withdraw to your own line, taking every precaution to get the men back safely.

A. A. HUMPHREYS,
Major General and Chief of Staff.

General Ord will do the same.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 13.

[By telegraph from headquarters 9th army corps.]

9 a. m., July 30, 1864.

Major General MEADE :

The attack made on right of mine has been repulsed. A great many men are coming to the rear.

W. W. SANDERS,
Captain and C. M.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 14.

[By telegraph.]

HEADQUARTERS FIFTH ARMY CORPS,
July 30, 1864—9.35 a. m.

To Lieutenant General GRANT :

I cannot see that we have advanced beyond the enemy's line in the vicinity of the mine. From here, it looks as if the enemy were holding a line between that point and the crest.

C. B. COMSTOCK,
Lieutenant Colonel and Aide-de-Camp.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 15.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 9 $\frac{1}{2}$ a. m., 1864.

Major General BURNSIDE, *Commanding 9th Corps* :

The major general commanding directs that you withdraw to your own intrenchments.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 16.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 10 a. m., 1864.

Major Generals BURNSIDE and ORD:

You can exercise your discretion in withdrawing your troops now or at a later period, say to-night. It is not intended to hold the enemy's line which you now occupy any longer than is required to withdraw safely your men.

GEO. G. MEADE,

Major General.

Official:

S. WILLIAMS,

Ass't Adj't Gen'l.

No. 17.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—7.40 p. m.

Major General BURNSIDE, *Commanding 9th Corps*:

The major general commanding desires to know whether you still hold the crater; and if so, whether you will be able to withdraw your troops from it safely to-night, and also to bring off the wounded. The commanding general wishes to know how many wounded are probably lying there. It will be recollected that on a former occasion General Beauregard declined to enter into any arrangement for the succor of the wounded and the burial of the dead lying under both fires; hence the necessity of immediate and active efforts for their removal in the present case.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. WILLIAMS,

Ass't Adj't Gen'l.

No. 18.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—10.35 p. m.

Major General BURNSIDE, *Commanding 9th Corps*:

The major general commanding desires to know whether you have any wounded left on the field; and directs me to say that he is awaiting your reply to the despatch of 7.40 p. m.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. WILLIAMS,

Ass't Adj't Gen'l.

No. 18½.

HEADQUARTERS ARMY OF THE POTOMAC,

July 31, 1864—8.40 a. m.

Major General BURNSIDE, *Commanding 9th Corps*:

The major general commanding directs me to call your attention to the fact that you have made no report to him upon the condition of affairs in your front

EXPLOSION OF THE MINE BEFORE PETERSBURG. 251

since he left your headquarters yesterday, and that you have made no reply to the two special communications upon the subject sent you last night at 7.40 p. m., and at 10.40 p. m.

I am also directed to inquire as to the cause of these omissions.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 18½.

[By telegraph from headquarters 9th Corps.]

JULY 31, 1864—9 a. m.

Major General HUMPHREYS:

Your despatch was received just as I was making out a report of our casualties. I have used every means to get something like accurate reports, but it has been difficult.

The rumors are very numerous and exaggerated. I will send report by messenger. The order to retreat caused great confusion, and we have lost largely in prisoners.

General Ord's men on our lines were not relieved.

A. E. BURNSIDE, *Major General.*

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 18½.

[By telegraph from headquarters 9th Corps.]

JULY 31, 1864—6.40 p. m.

Major General HUMPHREYS:

The loss in this corps in the engagement of yesterday amounts to about 4,500; the great proportion of which was made after the brigade commanders in the crater were made aware of the order to withdraw.

A. E. BURNSIDE, *Major General.*

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 19.

HEADQUARTERS ARMY OF THE POTOMAC,

July 31, 1864—7.20 p. m.

Major General BURNSIDE, *Commanding 9th Corps:*

Your despatch relative to the loss in your corps yesterday is received.

The commanding general requests that you will explain the meaning of the latter part of your despatch, and again reminds you that he has received no report whatever from you of what occurred after 11 a. m. yesterday.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 19½.

[By telegraph from 9th corps.]

JULY 31, 1864—9.10 p. m.

Major General HUMPHREYS, *Chief of Staff*:

Your despatch of 7.20 p. m. received. Just before the order for withdrawal was sent in to the brigade commanders in the crater, the enemy made an attack upon our forces there and were repulsed with very severe loss to the assaulting column. The order for withdrawal, leaving the time and manner of the execution thereof to the brigade commanders on the spot, was then sent in, and while they were making arrangements to carry out the order the enemy advanced another column of attack. The officers knowing they were not to be supported by other troops, and that a withdrawal was determined, ordered the men to retire at once to our old line. It was in this withdrawal, and consequent upon it, that our chief loss was made. In view of the want of confidence in their situation, and the certainty of no support, consequent upon the receipt of such an order, of which moral effects the general commanding cannot be ignorant, I am at a loss to know why the latter part of my despatch requires explanation.

A. E. BURNSIDE, *Major General*.

Official:

S. WILLIAMS, *Ass't Adj't Gen'l*.

No. 20.

HEADQUARTERS ARMY OF THE POTOMAC,

July 31, 1864—9½ p. m.

Major General BURNSIDE, *Commanding 9th Corps*:

Your despatch explanatory of that in relation to the loss in your corps yesterday is received.

The major general commanding directs me to say that the order for withdrawal did not authorize or justify its being done in the manner in which, judging from your brief report, it appears to have been executed, and that the matter shall be inquired into by a court.

The major general commanding notices that the time and manner of withdrawal was left to the brigade commanders on the spot. He desires to know why there was not a division commander present where several brigades were engaged, and by whom the withdrawal could have been conducted.

A. A. HUMPHREYS,

Major General and Chief of Staff.

Official:

S. WILLIAMS, *Ass't Adj't Gen'l*.

APPENDIX D.

Despatches from Major General Meade to Major General Ord, commanding 18th army corps, and from Major General Ord to Major General Meade, July 29, and 30, 1864.

No. 21.

HEADQUARTERS ARMY OF THE POTOMAC,

July 29, 9¼ p. m., 1864.

Major General ORD, *Commanding 18th Corps*:

Your despatch of 9.25 p. m. is received. The commanding general does not consider it necessary for General Burnside to wait for your troops to relieve his

in the trenches. General Burnside can form his troops for the assault without reference to yours, and your troops can file into the trenches at any time after they are vacated. General Burnside is telegraphed to that effect.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 22.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 4.50 a. m., 1864.

Major General ORD, *Commanding 18th Corps:*

General Burnside is ordered, if his mine has failed, to open all his batteries and assault at once. You will consider the orders the same as if the mine had exploded and the assault made in consequence.

A. A. HUMPHREYS,
Major General, Chief of Staff.

(Just before this was finished the mine exploded and the batteries opened. It was not sent.—A. A. H.)

Official copy :

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 23.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 6 a. m., 1864.

Major General ORD, *Commanding 18th Corps:*

The major general commanding directs that you at once move forward your corps rapidly to the crest of the hill, independently of General Burnside's troops, and make a lodgement there, reporting the result as soon as attained.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official copy :

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 23½.

[By telegraph from headquarters 9th army corps.]

JULY 30, 8 a. m., 1864.

General MEADE:

General Turner, in my front, reports that the only place I can get out of the line is opposite the crater. It is already full of men who cannot develop. I shall put in my column as soon as I can. It is impossible, by reason of the topography, to charge in the manner you indicate. I must go in by head of column, and develop to the right. This is reply to orders from General Meade to push for crest of hill, regardless of General Burnside's troops. General Ames makes similar reports.

E. O. C. ORD, *Major General.*

Official copy :

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 23½.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 9½ a. m., 1864.

Major General ORD, *Commanding 18th Corps*:

The major general commanding directs that you withdraw your corps to the rear of the 9th corps, in some secure place.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 24.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 10 a. m., 1864.

Major Generals BURNSIDE and ORD:

You can exercise your discretion in withdrawing your troops now or at a later period—say to-night.

It is not intended to hold the enemy's line which you now occupy any longer than is required to withdraw safely your men.

GEORGE G. MEADE,
Major General.

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

APPENDIX E.

Despatches from Major General Meade to Major General Warren, commanding 5th army corps, and from Major General Warren to Major General Meade, July 30, 1864.

No. 25.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 4.40 a. m., 1864.

Major General WARREN, *Commanding 5th Corps*:

General Burnside is directed, if his mine has failed, to open all his batteries and assault. Upon hearing his batteries open you will open all in your front.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 26.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 5.50 a. m., 1864.Major General WARREN, *Commanding 5th Corps*:

General Burnside is occupying the crater with some of his troops. He reports that no enemy is seen in their line. How is it in your front? Are the enemy in force there, or weak?

If there is apparently an opportunity to carry their works, take advantage of it and push forward your troops.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 27.

[By telegraph from 5th army corps.]

JULY 30, 6 a. m., 1864.

Major General HUMPHREYS:

Your despatch just received. It is difficult to say how strong the enemy may be in my front. He has batteries along the whole of it. I will watch for the first opportunity. I can see the whole line well where I am. The enemy has been running from his first line in front of General Burnside's right for some minutes, but seems to be a very heavy line of troops just behind it in high breastworks. There is a battery in front of General Burnside's left which fires towards the river, the same as it did on the 18th of June, and which our artillery fire has but very little effect on.

G. K. WARREN,
Major General.

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 28.

[By telegraph from headquarters 5th army corps.]

JULY 30, 6.15 a. m., 1864.

Major General HUMPHREYS:

I have just received a report from my line on the centre and left. The enemy opened with musketry when our firing commenced, but our own fire kept down, and also that of all their artillery except in the second line on the main ridge, from which they fire a little. Major Fitzhugh, of the artillery, is badly wounded by a musket ball in the thigh. None of the enemy have left my front that we can see.

G. K. WARREN,
Major General.

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 29.

[By telegraph from 5th army corps.]

JULY 30, 6.20 a. m., 1864.

Major General HUMPHREYS :

What we thought was the heavy line of the enemy behind the line occupied by General Burnside's troops proves, as the sunlight comes out and the smoke clears away, to be our own troops in the enemy's position.

G. K. WARREN,
Major General.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 30.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 6.30 a. m., 1864.

Major General WARREN, *Commanding 5th Corps :*

The signal officer reports that none of the enemy's troops are visible in their works near the lead works. The commanding general wishes, if it is practicable, that you make an attack in that direction. Prisoners say there are but three divisions in the works, and but one line of intrenchments, thinly filled with their troops.

A. A. HUMPHREYS,
Major General and Chief of Staff.

A despatch just going to Wilson to make a lodgement on the Weldon railroad and move up along it to the enemy's right flank.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 31.

HEADQUARTERS FIFTH ARMY CORPS,

July 30, 6.40 a. m., 1864.

General HUMPHREYS :

I have all my troops on my right except General Crawford's. I have sent him your despatch, with directions to do whatever he can on the left with Baxter's brigade and half of Lyle's.

Do you mean for me to move Ayres's in that direction ? The enemy have a 30-pounder battery on the main ridge in my front, behind their first line. We cannot make out what his second line is.

Respectfully,

G. K. WARREN,
Major General.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 32.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 7 a. m., 1864.Major General WARREN, *Commanding 5th Corps* :

What about attacking the enemy's right flank near the lead works with that part of your force nearest to it?

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 33.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 7½ a. m., 1864.Major General WARREN, *Commanding 5th Corps* :

Your despatch respecting attacking the enemy's extreme right received. The general commanding will await General Crawford's reconnoissance before determining whether you should send Ayres also in that direction.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 34.

HEADQUARTERS FIFTH ARMY CORPS,
July 30—7.50 a. m.

Major General HUMPHREYS :

I have just returned from the scene of General Burnside's operations. In my opinion, the battery of one or two guns to the left of General Burnside should be taken before attempting to seize the crest. It seems to me it can be done, as we shall take the infantry fire quite obliquely. This done, the advance upon the main hill will not be difficult. I think it would pay you to go to General Burnside's position. You can see in a moment, and it is as easy to communicate with me as by telegraph.

It will be some time before we can hear from Crawford.

Respectfully,

G. K. WARREN, *Major General.*

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 35.

BY TELEGRAPH FROM HEADQUARTERS 5TH ARMY CORPS,
8 a. m., July 30, 1864.

Major General HUMPHREYS :

I sent your despatch to General Crawford with directions to do what he could. He says the lead works are over a mile from the angle of my picket line. I do not think an attack upon the enemy's works at or near that point at all practi-

cable. With the force I can spare, I can make a demonstration if it is desired; the cavalry are moving and I will have my left uncovered. He sent word he will await further orders. He is so far off that I do not think it well to wait for anything more he can do, and I renew my suggestion that you take a look at things from General Burnside's headquarters, and direct me either to go in with Burnside, or go around to my left with Ayres's division, and I do the other thing.

G. K. WARREN, *Major General*.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No 36.

HEADQUARTERS ARMY OF THE POTOMAC,

8 $\frac{3}{4}$ a. m., July 30, 1864.

Major General WARREN, *Commanding 5th Corps* :

Your despatch is received. The major general commanding directs that you go in with Burnside, taking the two-gun battery. The movement on the left need not be carried further than reconnoissance to see in what force the enemy is holding his right. The cavalry are ordered to move up on your left and to keep up connexion.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 37.

BY TELEGRAPH FROM HEADQUARTERS 5TH ARMY CORPS,

9.15 a. m., July 30, 1864.

Major General HUMPHREYS :

Just before receiving your despatch to assault the battery on the left of the crater occupied by General Burnside, the enemy drove his troops out of the place, and I think now hold it. I can find no one who knows for certainty or seems willing to admit, but I think I saw a rebel battle-flag in it just now, and shots coming from it this way. I am, therefore, if this is true, no more able to take the battery now than I was this time yesterday. All our advantages are lost. I await further instructions, and am trying to get at the condition of affairs for certainty.

G. K. WARREN, *Major General*.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 38.

HEADQUARTERS ARMY OF THE POTOMAC,

9.25 a. m., July 30, 1864.

Major General WARREN :

The attack ordered on the two-gun battery is suspended.

GEO. G. MEADE, *Major General*.

Official copy :

S. WILLIAMS, *Ass't Adj't Gen'l.*

No. 38½.

BY TELEGRAPH FROM HEADQUARTERS FIFTH CORPS,

July 30, 1864—9.45 a. m.

Major General HUMPHREYS, *Chief of Staff*:

GENERAL: I find that the flag I saw was the enemy's, and that they have reoccupied all the line we drove them from, except a little around the crater which a small force of ours still hold.

Respectfully,

G. K. WARREN,
Major General.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 39.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—9.45 a. m.

General WARREN, *at 9th Corps Headquarters*:

A despatch has been sent to your headquarters rescinding order to attack; all offensive operations are suspended. You can resume your original position with your command.

GEORGE G. MEADE.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 40.

HEADQUARTERS ARMY OF THE POTOMAC,

July 30, 1864—5 p. m.

Major Generals WARREN and BURNSIDE:

Signal officers report the enemy returning rapidly from the north side of the James. Every preparation should be made to strengthen the line of works where any obstacles have to-day been removed. The lines should be held strongly with infantry and artillery, posted wherever practicable; available reserves held in hand ready for movement in case it becomes necessary. I anticipate offensive movements on the part of the enemy, and expect it will be by a movable column, turning our left and threatening our rear.

GEORGE G. MEADE,
Major General Commanding.

Major General Hancock will, to-night, resume his former position, and General Ord his also.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

APPENDIX F.

Despatches from Major General Meade to Brigadier General Mott, commanding division, 2d army corps, and to Major General Hancock, commanding 2d army corps; also despatches from Major General Hancock to Major General Meade, July 30, 1864.

No. 41.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—4.40 a. m.

Brigadier General MOTT, *Commanding Division in Intrenchments of 18th Corps, Old Headquarters of 18th Corps:*

General Burnside is ordered, if his mine has failed, to open all the batteries on his front and assault at once.

Upon hearing his batteries open, have all the batteries of the 18th corps opened.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 42.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—4.50 a. m.

OPERATOR *at Headquarters 18th Corps:*

Send the following message by orderly to General Hancock:

Major General HANCOCK, *Commanding 2d Corps:*

The commanding general wishes you to be about the headquarters of the 18th corps, so that he can communicate with you at any time.

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 43.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—6 a. m.

Major General HANCOCK, *Commanding 2d Corps:*

The major general commanding directs me to say that General Burnside reports the enemy's line in his front abandoned, and the prisoners taken say that there is no second line. The commanding general may call on you to move forward at any moment, and wishes you to have your troops well up to the front prepared to move. Do the enemy's lines in front of Mott's division appear to be thinly occupied, and is there any chance to push forward there?

A. A. HUMPHREYS,
Major General, Chief of Staff.

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 44.

BY TELEGRAPH FROM HEADQUARTERS 2D ARMY CORPS,
July 30, 1864—6 a. m.

Major General HUMPHREYS:

It is not possible to say about the line in front of General Mott, as both parties keep down firing whenever a head is shown. General Ord left word for me by General Mott that there was no place to assault here, as the line was not only protected by abatis but by wire. This was the decision of himself and his division commanders, and he requested General Mott so to inform me. I know nothing more about it. I will be prepared for your orders.

W. S. HANCOCK.

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 45.

BY TELEGRAPH FROM HEADQUARTERS 2D CORPS,
July 30, 1864—6.20 a. m.

Major General HUMPHREYS, *Chief of Staff*:

I have sent out to have General Mott's line examined as far as practicable, to see how strong the enemy appear to hold their line in General Mott's front.

W. S. HANCOCK, *M. G.*

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 45½.

BY TELEGRAPH FROM HEADQUARTERS 2D CORPS,
6.30 a. m., July 30, 1864.

Major General HUMPHREYS:

I have directed General Mott to advance a skirmish line to see whether the enemy hold a strong line in his front.

W. S. HANCOCK, *Major General.*

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 45¾.

BY TELEGRAPH FROM HEADQUARTERS 2D CORPS,
6.50 a. m., July 30, 1864.

General GEO. G. MEADE:

The brigade next to General Burnside's attempted an advance of a skirmish line just now, and lost the officer in command of the line and several men in getting over the parapet. The enemy's mortars are at work, but they cannot fire much artillery other than this. The other brigades have not yet been heard from. Your despatch is just received. I will continue to watch the enemy in my front.

W. S. HANCOCK, *Major General.*

Official copy:

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 46.

HEADQUARTERS ARMY OF THE POTOMAC,
7 a. m., July 30, 1864.

Major General HANCOCK :

The report from prisoners would indicate weakness in the enemy's line, and that a considerable portion has been vacated.

If Burnside and Ord gain the crest, the enemy cannot hold in your front, for they will be open to attack from front and rear. It was to take advantage of this contingency that I wanted you to have your troops in hand.

The orders to Mott are all right. If the enemy are in force and prepared, you will have to await developments; but if you have reason to believe their condition is such that an effort to dislodge them would be successful, I would like to have it made. Burnside now occupies their line, but has not pushed up to the crest, though he reports he is about doing so.

GEO. G. MEADE.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 47.

BY TELEGRAPH FROM HEADQUARTERS 2D CORPS,
7 a. m., July 30, 1864.

General HUMPHREYS, *Chief of Staff* :

Report from the 2d brigade of General Mott's division shows that the enemy are there in some strength, having two batteries which they fire seldom, owing to the close proximity of our riflemen. The commanding officer of the brigade says he can see every man who leaves his front to their right, and none have left since daylight. He is using mortars effectively. I will report any change of troops.

W. S. HANCOCK,
Major General.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 48.

BY TELEGRAPH FROM HEADQUARTERS 2D ARMY CORPS,
9 a. m., July 30, 1864.

Major General HUMPHREYS :

General Mott's remaining brigade deceived the enemy in their front by putting their hats on rammers above the parapet, which elicited quite a spirited volley.

W. S. HANCOCK,
Major General.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 49.

HEADQUARTERS ARMY OF THE POTOMAC,
9.25 a. m., July 30, 1864.

Major General HANCOCK :

Offensive operations have been suspended. You will for the present hold in force the lines held by the 18th corps. Make your dispositions accordingly.

GEO. G. MEADE,
Major General Commanding.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

APPENDIX G.

Miscellaneous papers.

Despatches from Major General Humphreys to Major General Sheridan and Brigadier General Wilson, July 29, 1864.

Despatches from Major General Humphreys, chief of staff, to Brigadier General White, temporarily commanding 4th division 9th corps, July 29, 1864.

Despatches from Major General Humphreys, chief of staff, to Colonel Wainwright, chief of artillery, 5th corps, July 30, 1864.

Despatches from signal officers, July 30, 1864.

Report of Major Duane, acting chief engineer of operations, July 30, 1864.

No. 50.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—10 p. m.

Major General SHERIDAN, *Commanding Cavalry Corps* :

The commanding general directs that you keep up connexion with our left in the operations of to-morrow.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 51.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—10 a. m.

Brigadier General WILSON, *Comd'g 3d Division Cavalry* :

The major general commanding directs that you concentrate your division on the left, somewhere near the plank road, and hold its available force ready for prompt movement.

The guard left with trains should be merely sufficient to protect them against any small irregular parties of the enemy. The dismounted men should form this guard. Please report your location as soon as established.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Major General and Chief of Staff.

P. S.—The patrols and pickets on the north side of the Blackwater should be reduced to the minimum consistent with watching the main avenues of approach.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 52.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—2½ p. m.

Brigadier General WILSON,
Comd'g Cavalry Division, Jordan's Point:

The commanding general considers that not more than one regiment should remain north of the Blackwater, and that be so posted as to be brought in rapidly to-morrow morning.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official copy :

S. WILLIAMS.
Ass't Adj't Gen'l.

No. 53.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—3¼ p. m.

Brigadier General WILSON, *Comd'g 3d Division Cavalry Corps:*

GENERAL: Major General Sheridan is ordered to move at dark to Lee's mill, and at daylight against the enemy's troops defending Petersburg on their right, by the roads leading to that town from the southward and westward.

Your division will accompany him, and the commanding general directs that you be prepared to call in your patrols and pickets early to-morrow morning and move with the cavalry corps. You will send a staff officer to meet General Sheridan and receive his instructions.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official copy :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 54.

HEADQUARTERS ARMY OF THE POTOMAC,
July 29, 1864—3 p. m.

Brigadier General WHITE,
Commanding (temporary) Division, 9th Corps:

The major general commanding directs that, as soon as it is dark, you withdraw your command from the intrenchments you are now holding, and move to

the position of the 9th corps, and report to your corps commander. You will call in your pickets upon moving.

You will at once report to Major General Burnside, and receive his instructions as to the route you will take.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 55.

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—4.34 a. m.

Colonel WAINWRIGHT, *Chief of Artillery, 5th Corps :*

General Burnside is directed, if his mine has failed, to open all the batteries on his front and assault at once. Upon hearing his batteries open, those of the 5th corps will open also.

A. A. HUMPHREYS,
Major General and Chief of Staff.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 56.

PLANK ROAD SIGNAL STATION,
July 30, 1864—5 a. m.

Major B. F. FISHER :

There are no tents or the sign of any force on the right of the enemy's line near lead works.

The two batteries directly in front of station, which opened heavily this morning, have ceased firing.

A large building is burning in the city.

I have seen no movement of the enemy's troops.

J. B. DUFF,
Lieutenant, Signal Officer.

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 57.

[By telegraph from Plank Road signal station.]

HEADQUARTERS ARMY OF THE POTOMAC,
July 30, 1864—6.20 a. m.

Major FISHER :

The enemy's infantry has been passing to our right for twenty minutes ; first noticed them at a point due west of the station marching in rear of their line ; they came out in plain view at a point northwest from station. The column

was at least a strong brigade; all the camps one-quarter mile of lead works have been broken up; the largest visible from station has just been broken up and the troops moved to our right.

Official :

J. B. DUFF, *Signal Officer.*

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 58.

[By telegraph from 5th corps.]

JULY 30, 1864.

Major FISHER :

The enemy are wholly concealed along the line in view of this station. Not one has been seen; only three guns, and those in redoubts at Gregor house, reply to us.

Copy sent to General Warren.

Official :

S. LYON, *Lieutenant.*

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 59.

HEADQUARTERS ARMY OF THE POTOMAC,
Office of Chief Engineer, August 5, 1864.

SIR: In compliance with directions received from you to-day, I have the honor to make the following report of the duty performed by the engineer officers during the assault of July 30.

In compliance with directions from the chief of staff, I detailed an officer of engineers for duty with each corps that was ordered to take part in the attack on the 30th of July.

Major Michler, who was charged with selecting the position of the column on the right, after having reconnoitred the position, reported to General Ord, and was informed that his subordinate generals had already examined the position, were thoroughly acquainted with the ground, and required no further assistance. They had already determined to take the same position indicated by Major Michler. Two engineer officers belonging to the 18th corps accompanied the movement.

Lieutenant Benyaura, engineer, who has been on duty on the 9th corps front, reported to General Burnside and remained with him during the whole affair.

After having consulted with the commanding general of the 5th corps as to the direction his column would take, I proceeded to the batteries in front of that corps and assisted Colonel Abbott in directing their fire so as to silence that of the enemy against the assaulting column. I then repaired to the right of his line. By this time, however, the attack had been abandoned and my services were no longer required.

Very respectfully,

J. C. DUANE, *Major Engineers.*

Official :

S. WILLIAMS,
Ass't Adj't Gen'l.

No. 60.

CIRCULAR.]

HEADQUARTERS NINTH ARMY CORPS,

July 29, 1864.

I. The mine will be exploded to-morrow morning at half past three by Colonel Pleasants. General Potter will issue the necessary orders to the colonel for the explosion.

II. General Ledlie will, immediately upon the explosion of the mine, move his division forward as directed by verbal orders this day, and if possible crown the crest at the point known as Cemetery hill, occupying, if possible, the cemetery.

III. General Wilcox will move his division forward as soon as possible after General Ledlie has passed through the first line of the enemy's works, bearing off to the left so as to effectually protect the left flank of General Ledlie's column, and make a lodgement, if possible, on the Jerusalem plank road, to the left of General Ledlie's division.

IV. General Potter will move his division forward to the right of General Ledlie's division as soon as it is apparent that he will not interfere with the movements of General Wilcox's division, and will, as near as possible, protect the right flank of General Ledlie from any attack on that quarter, and establish a line on the crest of a ravine which seems to run from the Cemetery hill nearly at right angles to the enemy's main line, directly in our front.

V. General Ferrero will move his division immediately after General Wilcox's until he reaches our present advance line, where he will remain until the ground in his front is entirely cleared by the other three divisions, when he will move forward over the same ground that General Ledlie moved over, will pass through our line, and, if possible, move down and occupy the village to the right.

VI. The formations and movements of all these divisions, together with their places of rendezvous, will be as near as possible in accordance with the understanding during the personal interviews with the division commanders.

The headquarters of the corps during the movement will be at the fourteen-gun battery, in rear of the Taylor house. If further instructions are desired by the division commanders, they will please ask for them at once.

By order of Major General Burnside.

W. H. HARRIS,
Captain Ordnance, U. S. A.

Official:

J. L. VAN BUREN,
Major and A. D. C.

No. 61.

ORDERS.]

HEADQUARTERS ARMY OF THE POTOMAC,

July 9, 1864.

1. The operations of this army against the intrenched position of the enemy defending Petersburg will be by regular approaches on the front opposed to General Burnside's and General Warren's corps.

2. The siege works will be constructed under the direction of the acting chief engineer of the army, Major J. C. Duane, corps of engineers, upon plans prepared by him and approved by the commanding general. Those plans that relate to the employment of the artillery will be prepared jointly by the acting

chief engineer and the chief of artillery of the army, Brigadier General H. J. Hunt, United States volunteers. Duplicates of the plan of siege will be furnished the commanders of the 9th and 5th corps.

3. The engineer officers and troops of the army will receive their orders from the chief engineer, who will regulate the hours at which they will go on duty.

4. The siege artillery will be served under the direction of the chief of artillery of the army, who will prescribe the hours at which artillery officers and troops go on duty.

5. A general of the trenches will be detailed daily for each of the two fronts designated where the siege operations are carried on by the commanders of the 9th and 5th corps respectively.

Guards of the trenches will in like manner be detailed daily from those corps. The strength of the guard will be determined by the commander of the corps furnishing it.

The general of the trenches is responsible for the security of the siege operations and the police and discipline of the trenches, and will dispose the guard so as to protect the working parties and repel sorties. For armed purposes, as well as for police and discipline, he commands all in the trenches.

He will report for instructions at the headquarters of his corps on the day previous to going on duty, and will confer with the officers of engineers and artillery in charge of the trenches and batteries, and visit the localities of the siege works, so as to make himself familiar with the ground, and determine upon the best disposition of the guard.

He will go on duty at 8 a. m., and, upon being relieved, will turn over to his successor all orders and instructions and information that he is possessed of pertaining to the duties specified.

The commander of the guard of the trenches will report to him for instructions at 8 a. m.

The guard of the trenches will go on duty at dark. Previous to the commencement of his tour of service, the commander will report for instructions to the general of the trenches.

The commander of the guard will report hourly to the general of the trenches what is transpiring in front, and immediately everything of importance.

The general of the trenches will make similar reports to the corps commander, who will transmit anything important to the commander of the army.

Upon being relieved, the general of the trenches will make a written report to his corps commander of the operations carried on during his tour, which will be forwarded to the commanding general of the army.

6. For the work of the trenches, details from the two corps named will be made upon the requisitions of the chiefs of engineers and artillery. These requisitions will specify the character and locality of the work to be performed.

An officer of high rank will be detailed daily to take charge of the working parties of each corps. He will be responsible for the faithful and energetic performance of duty by the working parties, and will see that they conform to the directions of the engineer and artillery officers in charge of the works.

In the event of an attack, he will command the working parties under the orders of the general of the trenches, and as soon after the commencement of his tour of duty as practicable he will report to that officer the manner in which the working parties are distributed.

He will report for instructions at the headquarters of his corps on the day before he goes on duty, and will confer with the engineer and artillery officers in charge of the trenches, and receive information from them as to the manner of performing the work, and visit the localities before dark, so as to make himself familiar with the same. He will go on duty at 8 a. m.

Upon being relieved, he will turn over to his successor all orders, instructions, and information pertaining to the duty that he may be possessed of.

Working parties will go on duty just before daylight. They will be equipped for action.

Upon being relieved, he will make a written report to his corps commander of the work executed by the working parties under his charge, which will be forwarded to the major general commanding the army.

7. Materials for the siege will be prepared by working parties detailed from the corps not in the trenches, upon requisitions of the acting chief engineer and chief of artillery.

8. The corps will relieve each other in the duties of the trenches should it be found necessary.

9. The acting chief engineer and chief of artillery will report every twelve hours to the commanding general the progress made in the operations.

The morning report will include a statement of the work proposed to be executed in the next twenty-four (24) hours following the tour of working duty then going on. These reports will be accompanied by drawings exhibiting the same.

Duplicates of these reports will be furnished to the commanders of the corps on whose front the operations are conducted.

By command of Major General Meade :

S. WILLIAMS,
Assistant Adjutant General.

Official :

EDWARD M. NEILL,
Assistant Adjutant General.

No. 62.

HEADQUARTERS NINTH ARMY CORPS,
July 3, 1864.

I have delayed answering your despatch until I could get the opinion of my division commanders and have another reconnoissance of the lines made by one of my staff. If my opinion is required as to whether now is the best time to make an assault, it being understood that if not made the siege is to continue, I should unhesitatingly say wait until the mine is finished.

If the question is between making an assault now, and a change of plan looking to operations in other quarters, I should unhesitatingly say assault now. If the assault be delayed until the completion of the mine, I think we should have a more than even chance of success. If the assault be made now I think we have a fair chance of success, provided my corps can make the attack, and it is left to me to say when and how the other two corps shall come in to my support.

I have the honor to be, general, very respectfully, your obedient servant,

A. E. BURNSIDE,

Major General Commanding 9th Army Corps.

Major General MEADE,
Commanding Army of the Potomac.

Official copy :

S. WILLIAMS,
Assistant Adjutant General.

No. 63.

HEADQUARTERS ARMY OF THE POTOMAC,

July, 3, 1864.

GENERAL: Your note by Major Leydig has been received. As you are of the opinion there is a reasonable degree of probability of success from an assault in your front, I shall so report to the lieutenant general commanding, and await his instructions.

The recent operations in your front, as you are aware, though sanctioned by me, did not originate in any orders from these headquarters. Should, however, it be determined to employ the army under my command in offensive operations on your front, I shall exercise the prerogative of my position to control and direct the same, receiving gladly at all times such suggestions as you may think proper to make. I consider these remarks necessary in consequence of certain conditions which you have thought proper to attach to your opinion, acceding to which, in advance would not, in my judgment, be consistent with my position as commanding general of this army. I have accordingly directed Major Dnane, chief engineer, and Brigadier General Hunt, chief of artillery, to make an examination of your lines and to confer with you as to the operations to be carried on, the running of the mine now in progress and the posting of artillery.

It is desirable as many guns as possible bearing on the point to be assaulted should be placed in position.

I agree with you in opinion the assault should be deferred till the mine is completed, provided that can be done in a reasonably short period, say a week.

Roads should be opened to the rear to facilitate the movements of the other corps sent to take part in the action, and all the preliminary arrangements possible should be made. Upon the reports of my engineer and artillery officers the necessary orders will be given.

Respectfully yours,

GEO. G. MEADE,

Major General Commanding.

Major General BURNSIDE,

Commanding 9th Army Corps.

Official:

S. WILLIAMS,

Assistant Adjutant General.

No. 64.

[Confidential.]

HEADQUARTERS NINTH ARMY CORPS,

July 4, 1864.

GENERAL: I have the honor to acknowledge the receipt of your letter of last evening. I am very sorry that I should have been so unfortunate in expressing myself in my letter. It was written in haste, just after receiving the necessary data upon which to strengthen an opinion already pretty well formed. I assure you, in all candor, that I never dreamed of implying any lack of confidence in your ability to do all that is necessary in any grand movement which may be undertaken by your army. Were you to personally direct an attack from my front I would feel the utmost confidence; and were I called upon to support an

attack from the front of the 2d or 6th corps, directed by yourself, or by either of the commanders of those corps, I would do it with confidence and cheerfulness. It is hardly necessary for me to say that I have had the utmost faith in your ability to handle troops ever since my acquaintance with you in the army of the Potomac, and certainly accord to you a much higher position in the art of war than I possess; and I at the same time entertain the greatest respect for the skill of the two gentlemen commanding the 2d and 6th army corps; so that my duty to the country, to you, and to myself, forbids that I should for a moment assume to embarrass you or them by an assumption of position or authority. I simply desired to ask the privilege of calling upon them for support at such times and at such points as I thought advisable. I would gladly accord to either of them the same support, and would be glad to have either of them lead the attack, but it would have been obviously improper for me to have suggested that any other corps than my own should make the attack in my front. What I asked in reference to calling upon the other corps for support is only what I have been called upon to do and have cheerfully done myself in regard to other corps commanders.

If a copy of my letter has been forwarded to the general-in-chief, which I take for granted has been done, that he may be possessed of my full opinion, it may make the same impression upon him as upon yourself, and I beg that you will correct it; in fact, I beg that such impression may be as far as possible removed wherever it has made a lodgement.

My desire is to support you, and in doing that I am serving the country.

With ordinary good fortune we can pretty safely promise to finish the mine in a week—I hope in less time.

I have the honor to be, general, very respectfully, your obedient servant,

A. E. BURNSIDE,

Major General Commanding 9th Army Corps.

Major General MEADE,

Commanding Army of the Potomac.

Official copy:

S. WILLIAMS,

Assistant Adjutant General.

HEADQUARTERS ARMY OF THE POTOMAC,

July 24, 1864.

MAJOR: Please give me, with as little delay as practicable, your views on the expediency of an assault on the enemy's works after a successful springing of General Burnside's mine, and particularly your views as to the subsequent operations after carrying the enemy's first line, and following up a lodgement on the crater of the mine.

Respectfully yours,

GEORGE G. MEADE,

Major General Commanding.

Major J. C. DUANE,

Acting Chief Engineer, Army of Potomac.

HEADQUARTERS ARMY OF THE POTOMAC,

Office of Chief Engineer, July 24, 1864.

GENERAL: In reply to your communication of this date, I have the honor to state that the line of the enemy's works in front of General Burnside is not sit-

uated on the crest of the ridge separating us from Petersburg—that the enemy have undoubtedly occupied this ridge as a second line. Should General Burnside succeed in exploding his mine, he would probably be able to take the enemy's first line, which is about one hundred yards in advance of his approach. Beyond this I do not think he could advance until the works in front of the 5th corps are carried, as the 9th corps columns would be taken in flank by a *heavy artillery fire* from works in front of the centre of the 5th corps, and in front by fire from the works on the crest near the Cemetery hill.

I do not believe that the works in front of the 5th corps can be carried until our lines can be extended to the left so as to envelop the enemy's line.

Very respectfully, your obedient servant,

J. C. DUANE, *Major of Engineers.*

Major General MEADE,
Commanding Army of Potomac.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 8, 1865.—Ordered to be printed.

Mr. CLARK submitted the following

REPORT.

The Committee on Claims, to whom were referred the memorial and documents relative to the claim of Henry Rudd, have had the same under consideration, and respectfully report :

On the third day of February, 1864, Henry Rudd made a contract with the government for the purchase and delivery of five hundred cavalry horses at Des Moines, Iowa, within fifty days from the date of the contract. Said Rudd was to be paid \$124 each for the first two hundred, \$128 each for the second two hundred, and \$129 50 each for the last one hundred, payable on the completion of the contract.

Upon this contract Mr. Rudd had two extensions of time granted, amounting in all to forty-five days' extension.

Notwithstanding an increased price at contiguous markets, he completed his contract in an honorable manner, and furnished good horses.

The petitioner claims that he was prevented from filling his contract by the incompetency or partiality of the government inspector a Captain Baker, and that he was at great expense, being obliged to keep a large number of horses in stables at Des Moines, waiting inspection, and also that the government should pay him the difference between his contract price and the price at which the government was contracting for and purchasing horses at the time he made his delivery.

It appears that Captain Baker commenced the inspection at Des Moines, when Mr. Rudd was ready to deliver two hundred or three hundred horses; that Rudd brought out fifteen or twenty of them for inspection, and after examination rejected eight of them, branding seven with the letter R, when Mr. Rudd interfered and would not let him put the brand on the eighth horse, alleging that Baker was not a competent judge, and that the condemned horses were as good as could be furnished in the market, and such as his contract contemplated. Mr. Rudd would not submit to the examination and inspection of Captain Baker, and no more horses were examined at that time. Captain Baker was removed, and another inspector sent by the government, who received all the above rejected horses on the contract except two, which two Rudd afterwards sold to a stage company for \$150 each. In consequence of these difficulties there was a delay in the inspection of the horses, and Rudd kept a large number—as he alleges, (250) two hundred and fifty horses—forty days, during which time a distemper got among them, and he lost three or four horses, and many of them were much reduced in flesh, and required a great deal of care. For this loss and extra expense he claims the government should pay him the sum of ten thousand dollars.

By the provisions of the contract they were, "upon being delivered, to be examined and inspected without unnecessary delay by a person or persons appointed by the United States," &c.

The government cannot be held to be insurers in any sense, and the delay in the inspection would appear to have been the result in part of the claimant's own act. There is no proof that there was unnecessary delay in any manner on the part of the government, but that the government not only granted a new inspector, but also extended the time for delivery.

As to the claim for the difference between the contract price and that of the market at the time of the fulfilment of the contract, there can be seen no difference between the situation of the government and that of an individual. The government never guarantees a profit to contractors, and in granting relief it is not the practice to remunerate them for prospective, estimated, or constructive profits.

To bind the government for damages, it must be clearly shown that the government has broken its contract, and that by the act of the government, and without the consent of the contractor, he has suffered actual loss.

The committee are of opinion that the memorialist in this case has failed to show any claim against the government which can be allowed.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 8, 1865.—Ordered to be printed.

Mr. CLARK submitted the following

REPORT.

The Committee on Claims, to whom was referred the memorial of Alfred Spink and Daniel Wolf, praying remuneration for losses sustained by them from the seizure of two hundred and seventy-seven bales of cotton by the government of the United States, and the confiscation of the same as property of the rebels, respectfully report :

It appears that on the 26th day of September, 1862, a lot of cotton, several hundred bales, was taken from Kipp's plantation in Arkansas, and brought within the federal lines, about four miles south of Helena, by an order of an officer of the United States army, and placed on ferry-boats and taken to Helena, and there put upon the government wharf-boats. After being there several days, by permission of Brigadier General Steele, it was, on the 30th of September, 1862, taken on board the steamer Gladiator. It then consisted of 277 bales, and the permit was given to one W. L. Grant, as follows:

“HEADQUARTERS ARMY OF THE SOUTHWEST,

“*Helena, Arkansas, September 30, 1862.*

“Permission is hereby granted to William L. Grant to ship 277 bales of cotton northward, on the steamer Gladiator, and through to St. Louis.

“By order of Brigadier General Steele.

“J. W. PADDOCK,

“*Assistant Adjutant General.*”

This cotton had been released from seizure on the same day by the following order:

“HELENA, ARKANSAS, *Sept. mber 30, 1862.*

“Permission is hereby given to ship the within cotton north to St. Louis, said lot was seized by a verbal order to me from Brigadier General Steele, and after full investigation of all circumstances connected with its purchase, I am satisfied it was regularly bought, and entitled to be disposed of by Mr. W. L. Grant at his pleasure. General Steele being absent from the command, the responsibility of deciding in the above case was left to me, and I hereby give my full permission to its restoration to its owner.

“FRED. S. WINSLOW,

“*Capt., A. Q. M., Chief Q. M. Army Southern.*”

Upon these papers it was taken to Memphis, where it was seized by order of General Sherman, and released October 2, 1862.

It was sold by Grant to Alfred Spink, as appears by a bill of sale dated October 6, 1862, and by him taken to St. Louis, where it was libelled and seized, and sold by order of the district court of the United States, and after a proper

hearing upon said bill, and the answer of the defendants, the claimants aforesaid, the decrees and judgment of said court, confiscating the said cotton for the use of the United States, were fully confirmed.

It also appears that at the time of the taking of the cotton at the plantation in Arkansas many of the bales were marked by the letters C. S. A. stamped on the ends of the bales; and that when the cotton reached St. Louis some of the letters had been partially effaced, and others had been covered by patches of cloth, and other marks substituted.

The committee have not stated this testimony for the purpose of presenting the probabilities as to which side was right in this case, but to show the nature of the testimony which probable went before the court.

The court heard the case both on the part of the claimants and of the government.

There is no complaint of the partiality of the court, nor of any want of jurisdiction; neither is there any complaint of the want of an opportunity for a full hearing, or any allegation of the discovery of new testimony. Your committee, therefore, are of opinion, under these circumstances, that the judgment of the court should stand; and that, until that judgment is reversed or set aside, it must be taken as conclusive.

Courts are peculiarly adapted for receiving and weighing testimony, hearing parties, and forming conclusions in matters of this character. It certainly would be strange, if not unheard of, for a committee of either branch of Congress to recommend that a decree of a court of competent jurisdiction, solemnly rendered, should be reversed or set aside, unless they were fully satisfied that the greatest injustice had been done.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 9, 1865.—Ordered to be printed.

MR. HARLAN submitted the following

REPORT.

The Committee on Public Lands, to whom was referred the "petition of Dennis Nolan, praying that he may be allowed to purchase or lease a strip of land now occupied by him, lying between the enclosure of the light-house and the shore of Lake Michigan, in Michigan City, Indiana," have had the same under consideration, and after consultation with the Commissioner of the General Land Office and Light-house Board, for reasons set forth in their respective communications herewith submitted, and made a part of this report, do not deem it advisable to grant the prayer of petitioner. They therefore request to be discharged from a further consideration of the subject.

DEPARTMENT OF THE INTERIOR,
General Land Office, January 18, 1865.

SIR: In answer to the call of your committee in regard to the petition of Dennis Nolan for a grant of land near Michigan City, on the shore of Lake Michigan, I have to state that there is no vacant public land in section 29, township 38, north range, 4 west, Indiana, in which Michigan City is situated. The tract which the petitioner wishes secured to him is probably within a light-house reservation, and if so it may be important to obtain the views of the Light-house Board in regard to granting the prayer of the petitioner.

I have the honor to be, very respectfully, your obedient servant,

J. M. EDMUNDS, *Commissioner.*

HON. JAMES HARLAN,
Chairman Committee on Public Lands, United States Senate.

TREASURY DEPARTMENT,
Office Light-house Board, February 3, 1865.

SIR: I have had the honor to receive your letter of the 21st ultimo, enclosing letter from Dennis Nolan, asking to be permitted to purchase a strip of land near the light-house grounds at Michigan City, Indiana.

The light-house land at that place was acquired by purchase from Mr. Isaac C. Elston, in 1835. It embraces the margin of the lake—a condition deemed of paramount importance for light-house purposes; and this board is of opinion

that it would be detrimental to the interests of the public service to recommend the sale of any portion of this ground, but more especially that which borders on the lake.

The attention of the light-house engineer of the district has been called to the subject, and if it is found that Mr. Nolan is in occupation of any part of the premises belonging to the light-house establishment, such steps will be taken as the interests of the public service may require.

The letter of Mr. Nolan is herewith returned.

Very respectfully,

W. B. SHUBRICK, *Chairman.*

Hon. JAMES HARLAN.

MICHIGAN CITY, INDIANA,
January 6, 1865.

*To the honorable Senate and House
of Representatives in Congress assembled :*

The undersigned would most respectfully represent that he is occupying a strip of land lying between the enclosure of the light-house and the shore of Lake Michigan, in this city, all sand and beach shore, containing perhaps two or three acres, with his shanty and shed upon it, not enclosed nor susceptible of any cultivation; but all he has is on it, and he desires to buy or lease it of the general government, and he prays your honorable body to take action in the premises, as he in duty bound will ever pray, &c.

DENNIS NOLAN.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 11, 1865.—Ordered to be printed.

Mr. POMEROY made the following

R E P O R T.

[To accompany Joint Resolution S. 109.]

The Committee on Claims, to whom was referred the petition and papers relating to the claim of George J. Stubblefield, having examined the evidence in the case, respectfully report:

At the breaking out of the rebellion Mr. Stubblefield was a resident of McMinnville, in the State of Tennessee. As a friend of the government of the United States, known to be hostile to the cause of the rebels, he was forced to leave his family and home and take refuge within the Union lines, where he has ever since remained. Soon after his escape he was appointed by Governor Andrew Johnson attorney general for the criminal district of Nashville, which office he now holds.

When he left his home he directed his wife to dispose of all of his property she could, and invest the proceeds in something which could be secreted from the rebels or removed without their knowledge, hoping thereby to save something for her and his children's support. In accordance with this direction, Mrs. Stubblefield, having converted the property of her husband into confederate money, proceeded, through her relations and friends in the State of Georgia, to invest it in chewing tobacco.

This tobacco was given into the hands of an express company, and when on its way from Georgia to McMinnville, in Tennessee, was stopped by the rebels at Atlanta. Mrs. Stubblefield, however, succeeded in getting the property into the hands of a Union man and her agent, H. R. Myers, who held it secreted till after the capture of Atlanta by General Sherman. Then it was taken by Myers and removed to and stored with Mr. J. B. Hunt, purveyor to the headquarters of Major General Thomas. On the 28th of September, 1864, a guard was placed over the tobacco by Captain Stuart, assistant quartermaster, under special field order No. 67, Sec. 2, by General Sherman, directing "all quartermasters to take charge of all property found in Atlanta."

On the 30th of September, 1864, Myers was directed by Captain Stuart to turn the tobacco over to Captain J. M. Blair, department commissary, and he delivered Blair one hundred and nine (109) boxes, containing nine thousand eight hundred and thirty-one (9,831) net pounds of tobacco.

By the following order General Sherman ordered this tobacco to be disposed of on account of Stubblefield:

"HEADQUARTERS MILITARY DIVISION OF THE MISSISSIPPI,
"Nashville, Tenn., November 5, 1864.

"Mr. JAMES ROBBINS,
"Care of Captain Blair,
"Post Commissary, Atlanta, Ga.

"You are authorized to take and dispose of, on account of Stubblefield and Myers, one hundred and nine boxes tobacco, said to contain nine thousand eight hundred and thirty-one pounds, stored at Atlanta, and receipted for by you on the 30th September last.

"W. T. SHERMAN,

"Major General."

"By J. D. WEBSTER,

"Brigadier General."

"Official:

"J. D. WEBSTER,

"Brigadier General."

Captain J. M. Blair, in his returns to the office of the commissary general in the months of September and November, 1864, accounts for tobacco as follows: "Received at Atlanta, Ga., of chewing tobacco, 28,381 pounds; of this there was received from Geo. J. Stubblefield 9,831 pounds." From the same returns it appears that this and the other tobacco has been issued as rations to the soldiers of General Sherman's army.

The loyalty of the claimant in this case is fully proved by the certificate of Governor Andrew Johnson; also the order for and issuing of the tobacco to the troops.

From the foregoing facts, as proved by the claimant and the official reports at the War Department, the committee think the claimant should be paid, and report the accompanying joint resolution for his relief.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 11, 1865.—Ordered to be printed.

Mr. WADE, from the Joint Committee on the Conduct of the War, submitted the following testimony of Lieutenant General Grant on the

EXCHANGE OF PRISONERS.

Question. It is stated, upon what authority I do not know, that you are charged entirely with the exchange of prisoners.

Answer. That is correct. And what is more, I have effected an arrangement for the exchange of prisoners, man for man and officer for officer, or his equivalent, according to the old cartels, until one or the other party has exhausted the number they now hold. I get a great many letters daily from friends of prisoners in the south, every one of which I cause to be answered, telling them that this arrangement has been made, and that I suppose exchanges can be made at the rate of about 3,000 a week. And just as fast as they can deliver prisoners to us I will receive them and, deliver their prisoners to them. And the Salisbury prisoners will be coming right on. I myself saw Colonel Hatch, the assistant commissioner of exchange on the part of the south, and he told me that the Salisbury and Danville prisoners would be coming on at once. He said that he could bring them on at the rate of 5,000 or 6,000 a week.

Question. There is now no impediment in the way?

Answer. There is no impediment on our side. I could deliver and receive every one of them in a very short time, if they will deliver those they hold. We have lost some two weeks lately, on account of the ice in the river.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 11, 1865.—Ordered to be printed.

Mr. CLARK made the following

REPORT.

[To accompany bill S. No. 442.]

The Committee on Claims, to whom was referred the petition and accompanying documents relative to the claim of William Pierce, of San Francisco, California, respectfully report :

This claim is for the reissuing by the United States of four Oregon war bonds, with nineteen coupons attached to each. Said bonds were of the following numbers, and for the following several amounts, viz : Bond No. 679, for \$100; bond No. 682, for \$100; bond No. 681, for \$100; bond No. 270, for \$50—each of said bonds being signed "L. E. Chittenden, Register for the Treasury," and each of the coupons attached being signed "G. Luff," and all were on the 21st day of July, 1862, deposited by the petitioner in the United States mail at San Francisco, to be forwarded by the mial steamer Golden Gate. All of the before-mentioned bonds were regularly addressed and directed to Marshall Pierce, Biddeford, Maine.

On the 27th of July, 1862, the steamer Golden Gate, while on her passage from San Francisco to Panama, caught fire, and was so far destroyed that she sunk, and, together with a larger portion of the mails on board, became a total loss. The before-mentioned bonds were in said United States mails, and have never reached their destination, and no part or portion of them has ever been recovered by either of the diving-bell expeditions which have visited the wreck of the Golden Gate for the purpose of recovering property and mails; therefore your committee recommend the passage of the accompanying bill for the relief of the petitioner.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 13, 1865.—Referred to the Committee on Naval Affairs and ordered to be printed.

IN THE SENATE OF THE UNITED STATES,

January 25, 1864.

On motion by Mr. WILSON,

Resolved, That the Committee on the Conduct of the War be instructed to inquire into the character and efficiency of the heavy ordnance now provided for the armament of fortifications; the mode of fabrication; the amount of "royalty" paid, and to whom, for the use of a patent in the manufacture; the tests to which these guns are subjected when received into service; the reasons for believing the tests satisfactory; what proportion of our sea and land armament is of rifled ordnance; when rifled guns were introduced, and the cause of the delay pertaining thereto.

Attest :

J. W. FORNEY, *Secretary*.

Mr. WADE, from the Joint Committee on the Conduct of the War, submitted the following

REPORT.

The Joint Committee on the Conduct of the War, in pursuance of the foregoing resolution, ask leave to make the following report, with the accompanying testimony :

Your committee began the investigation required by the resolution of the Senate early last session; but being unable to obtain the testimony of the inventors and manufacturers of the two guns, into the composition of which wrought-iron entered in whole or in part, they deferred the subject until this session, when they were enabled to complete their investigation.

Under the head of "heavy ordnance" your committee would call attention to three classes of guns : First, those made entirely of cast-iron; second, those made of cast-iron and banded with wrought-iron; and, third, those made entirely of wrought-iron. Of the first class are the guns generally known as the Dahlgren gun, and the Rodman gun. Of the second class is the Parrott gun. Of the third class is the Ames gun. There is still another gun, known as the Wiard steel gun, but as it does not come, so far as your committee have been able to learn, under the head of "heavy ordnance," they have not deemed it necessary to devote much attention to it.

The Rodman gun, while having to some extent its peculiarity of form, is principally distinguished by the mode adopted in its manufacture, which is an invention of Major T. J. Rodman. The casting is made around a hollow core, or core-barrel, as it is termed, into which is introduced a stream of cold water, the outside of the casting being kept heated until the cooling from the interior

reaches the outer portion of the mass of metal forming the casting. This mode of manufacture, it is claimed, insures two important advantages over the old method of casting the gun solid and then boring it out. The strain upon the metal produced by cooling in large masses is reversed, rendering the gun less liable to burst from the explosion of the powder in it; and a much greater degree of hardness is given to the interior surface, rendering the gun less liable to abrasion in the bore by the passage of the projectile along it, and the action of the gases of the powder upon the metal. It is generally held by the witnesses that no effective gun of large calibre can be made of cast-iron except upon the Rodman principle, or the principle of cooling from the interior.

The Dahlgren gun is the invention of Rear-Admiral John A. Dahlgren, and is distinguished by its exterior form. The plan adopted to avoid the strain consequent upon cooling a solid casting of large size from the outside, is to make the casting considerably larger than would otherwise be needed to produce a gun of the required size, anneal it after cooling, and then turn it down to the proper size and form. But the Dahlgren guns of the largest calibre are now being manufactured upon the Rodman principle.

These two guns are the only guns of large calibre, made entirely of cast-iron, which are now used in the service. It will be seen from the testimony that officers of the navy generally prefer the Dahlgren gun for naval service, while officers of the army express a preference for the Rodman gun. Both of these guns would appear, from the testimony, to be the best cast-iron guns now known to any service. They are generally smooth-bore guns, but few, if any, of the larger calibre being rifled.

The rifled gun, of large calibre, employed almost wholly in the army and naval service, is the gun invented by Robert C. Parrott. It is composed of a cast-iron cylinder with a wrought-iron jacket or band shrunk upon the breech of the gun, in order to strengthen it about the seat of discharge. The cast-iron cylinder of this gun was formerly cast solid, and then bored out; but latterly, those of the largest calibre are cast upon the Rodman principle.

The introduction of the turreted iron-clads into our naval service impressed upon the department the necessity for guns of large calibre. Those vessels carrying but few guns, and being designed to operate against other iron-clads, as well as to resist the effect of opposing batteries, it was considered important to have guns throwing projectiles, shot or shell, of the greatest possible weight, and guns of as large calibre as fifteen inches were designed and constructed principally for use on turreted vessels. The result of the contest between the United States iron-clad Weehawken and the rebel iron-clad Atlanta shows the remarkable effect of heavy projectiles upon iron-clad vessels.

The Parrott rifled gun of large calibre is also used upon our naval vessels, being able to throw projectiles with greater accuracy and to a greater distance than the smooth-bore guns. At the time of their introduction into the service they were undoubtedly the best rifled guns of large calibre which the government could obtain. They were not much more expensive than the cast-iron gun of the same calibre, and yet are deemed by our officers to be nearly, if not quite, equal to the best wrought-iron guns manufactured by other nations. They have rendered most material service both upon land and upon sea.

But the bursting of the Parrott guns of large calibre, together with the bursting of some of the cast-iron guns of large calibre, upon the vessels engaged in operations against the defences of Charleston, and against Fort Fisher, has tended to weaken confidence in the durability of those guns, and would seem to show the necessity of obtaining, if possible, some other gun which can be more implicitly relied upon. It is the testimony of our officers of the navy that the bursting of one gun in a fleet tends to demoralize the crew of each vessel upon which a gun of that kind is used, whether it bursts or not. And it is asserted that the loss sustained by the bursting of guns of large calibre on

vessels operating against Fort Fisher was much greater than the loss sustained on the entire fleet from the fire of the enemy.

The bursting of these guns is generally attributed to the explosion of shells prematurely within the bore of the gun. The opinion of Mr. Parrott in regard to the cause or causes of premature explosion of the shells is as follows:

"It has been a matter of much concern with me, and I would rather not make a gun than have any accident occur. I ascribe the difficulty to the friction of the powder in the shell itself. At first it was natural enough to ascribe the difficulty to bad shells, bad castings, bad fuzes, &c.; but, upon full trial, it appears above all question that the difficulty arises from the powder exploding in the shell within the gun by friction, caused by the striking of the powder against the inside of the shell. A 300-pounder shell is ten inches in diameter; a round shell of that diameter holds about three pounds of powder. My 300-pounder shell holds about seventeen pounds of powder. Now, when you fire a gun and strike the but of a shell suddenly with the immense force of the charge, there is a reaction of the powder within the shell against the bottom of the shell; and if there is any roughness so as to cause friction at the bottom, the powder will be exploded in the shell while it is within the gun. Thinking that to be the case, I have for a long time been endeavoring to coat the inside of the shell with varnish or lacker, and now I am able to do it with entire success. A great many people were skeptical about it, and precautions have not been taken in regard to it as quickly as they might have been. I now melt together rosin, tallow, and brown soap, forming a thin liquid mixture, and pour it into my shells and pour it out again, leaving a coating on the inside which covers over the rough iron, and when that is done I find the shells can be fired without premature explosion.

"Some two months ago Captain Temple, one of the officers of this very fleet of Porter's, came to the foundry and became aware of this fact. He had two 100-pounders on board his vessel; when he got back he found that his shells had no such coating, and he immediately set to work and lined them with asphaltum, &c. He fired his guns fifty or sixty times each during the engagement, and not a single shell exploded prematurely in his guns; while in some of the other vessels around him shells were exploded prematurely, and thrown out of the guns in fragments. That is so stated in a letter of his which I saw yesterday."

Be the cause or causes what they may, the fact is that these guns do burst while in action, with very disastrous results.

It is, therefore, of the highest importance to obtain, if possible, some kind of heavy ordnance which shall not be liable to these objections. The entire efficiency of an iron-clad vessel, costing the government hundreds of thousands of dollars, may depend almost entirely upon the character of the guns with which she is armed. In the words of the Assistant Secretary of the Navy, "You might lose a battle by going into action with a gun around which stood twenty-five men entertaining the idea all the time that it might burst." Considering the great cost of our iron-clad vessels, and the importance of the results to be attained by rendering them as secure and efficacious as possible, a few thousand dollars more of expense would seem to be of but little moment, if it affords the only means of reaching the end desired. The disastrous results attending the bursting of a gun can be, to a greater extent, guarded against upon land than at sea. In the latter case, the loss of the vessel, with all on board, may be the consequence, while the demoralization of the crews of the other vessels similarly armed may lead to results almost, if not quite, as disastrous. But, upon both land and sea it is of the utmost importance to obtain heavy ordnance of the most reliable character.

In view of these considerations, your committee desire to refer, somewhat at length, to a wrought-iron gun which to them seems to possess those qualities

of strength, durability, and safety which are so very desirable. It is the invention of Horatio Ames. But few of these guns have yet been manufactured, yet they have successfully withstood every test that has been applied to them.

Upon the 21st of August last, at the request of the inventor, the President ordered the appointment of a board to test a gun of 7-inch calibre, manufactured by Mr. Ames. The board consisted of Major General Gillmore, United States army, Commodore T. A. Hunt, United States navy, and Major T. T. S. Laidley, United States army, inspector of cannon, &c. The trial commenced at Bridgeport, Connecticut, on the 15th of September, and continued until the gun had been fired seven hundred times. The details of the trial are contained in the report of the board, a copy of which is submitted in the testimony accompanying this report.

The mode of manufacturing the gun is described by the board in their report, as follows:

"The gun is built up from the cascabel on the end of a long cylindrical port bar. The end of this bar is first enlarged by welding pieces around it. It is then enlarged still further by placing two rings on the end, one over the other, concentrically, and welding them there in succession. Against the end of the cylinder, thus increased to twenty-eight (28) inches in diameter, is welded a circular plate or disk, also twenty-eight inches in diameter, and four inches thick. The disk is composed of a centre-piece, ten inches in diameter, surrounded by two concentric rings, one outside of the other, all accurately fitted together by turning. The bottom of the bore terminates against this disk. Upon this disk is welded a ring of twenty-eight inches exterior diameter, four inches interior diameter, and five inches thick, compounded of three concentric rings, accurately fitted together by turning. The inner one is ten inches in exterior diameter, and about six inches in thickness, so that its ends project on either side about half an inch beyond the faces of the other two rings. This is intended to secure a perfect weld next the bore, and force out the slug. Other compound rings, made in the same manner, are welded on, one after the other, until the gun is of the required length. In making the compound rings for the small part of the gun between the trunnions and muzzle, the outer ring is omitted.

"The gun remains in a horizontal position during this process of construction, and is handled by means of the bar projecting from the cascabel. The welding on of the disk and rings is done with a hammer worked horizontally by steam; a hammer working vertically is also used against the sides of the piece. The inner ring of the compound rings is made from a block six inches by ten inches, by boring a hole five inches in diameter through it, and turning off the corners. The fibres and laminæ of the metal lie at right angles to the axis of the gun. The centre and outer rings are made like a tire by bending the bars and welding the ends together, thus placing the layers of the metal in cylindrical surfaces. The trunnions are attached by being screwed into the sides of the piece three inches."

In regard to the projectiles and charges used, the board report:

"Considerable delay and many interruptions in the progress of the trials were occasioned by the want of suitable projectiles. Those of the Hotchkiss pattern, which have been officially proscribed for rifles of a large calibre, on account of their excessive strain upon the gun, were almost exclusively used. In weight they varied from 104 to 127 pounds.

"The powder used was what is known as No. 7 experimental powder, giving a pressure of 57,000 pounds per square inch in an eight-inch gun. The charges were varied increasingly from thirteen to thirty pounds, although it was frequently necessary to reduce the higher charges in order to accommodate the projectiles, from which the packing would often strip, or the cap break, even with comparatively low charges."

As the result of their examination, the board report :

"It is the unanimous opinion of the board that Ames's wrought-iron guns possess, to a degree never before equalled by any cannon of equal weight offered to our service, the essential qualities of great lateral and longitudinal strength, and great powers of endurance under heavy charges ; that they are not liable to burst explosively and without warning, even when fired under very high charges ; and that they are well adapted to the wants of the service generally, but especially whenever long ranges and high velocities are required. It is also the unanimous opinion of the board that Ames's seven-inch guns, of which he has now fifteen nearly finished, possess sufficient weight and strength to receive an eight-inch bore, and even greater, although not heavy enough for a ten-inch bore."

And to show more fully their confidence in the strength and durability of the gun they had tested by firing it 700 times, the board—

"Further recommend that the gun which they have tried be rebored to eight inches and rifled, and then submitted to another series of tests similar to those through which it has just passed, to be then cut up for examination."

Accounts of further and apparently far more severe tests are given in the testimony of Mr. Ames.

The opinion of Mr. Fox, the Assistant Secretary of the Navy, of the Ames gun, and of the necessity for some gun of that character, is thus stated by him in his testimony :

"I think it is a fair inference, from the experience we have had with the small guns and 100-pounders which he (Mr. Ames) has made, that he has the correct principle of manufacture, and that guns manufactured by his method will bear any amount of charge that can be consumed in the gun. * * * * My opinion is that we have got to come to wrought-iron or steel guns, and abandon cast-iron."

In regard to the cost of those several guns, the price of a 100-pounder Parrott gun is \$1,300 ; a 200-pounder about \$2,000 ; a 300-pounder from \$4,500 to \$5,000. Of the cast-iron guns, the contract price for the 15-inch gun, as stated by Mr. Fox, is \$7,500 ; those of smaller calibre in proportion. The Ames gun would cost about a dollar a pound, or about \$12,000 for a 100-pounder ; \$17,000 for a 150-pounder, and \$28,000 for a 200-pounder.

In regard to the payment of "royalty" by the United States for any of these guns, the testimony establishes the following facts :

The Rodman gun, or rather the Rodman principle of manufacture, was made the subject of letters patent under the following circumstances, according to the testimony. The bursting of the "Peacemaker," on board the Princeton, some twenty years ago, led Major Rodman, then a lieutenant in the military service of the United States, to investigate the subject of manufacturing ordnance of heavy calibre. In 1845 he laid his invention before the Ordnance Bureau, being the first inventor of the principle claimed by him, and urged its adoption, without success. At two other times he urged its adoption, but the bureau did not deem it of sufficient importance to receive its favorable consideration. In 1847, Major Rodman asked General Talcott if there would be any impropriety in having his invention secured by letters patent, and carried out by private enterprise ; to which General Talcott replied, "Certainly not," and, to use the words of Major Rodman, "appeared to be very glad indeed to get rid of the subject in that way and on those terms." Consequently, in August, 1847, letters patent were taken out in the name of Major Rodman, then Lieutenant Rodman. Arrangements were made with Messrs. Knap & Totten, the proprietors of the Pitt foundry, at Pittsburg, by which they agreed to go to the expense, and run the risk, then considered to be great, of carrying the invention into practical operation, in consideration of the transfer to them of one-half the interest in the letters patent. This arrangement continued until about four years ago, when

Major Rodman, not being in a condition to take any share in conducting the business, transferred to Mr. Knap the full control of the patent; Mr. Knap obligating himself to pay to Major Rodman one-half cent per pound for all castings upon the Rodman principle manufactured by him, or by others, and upon which Mr. Knap collected what may be termed a royalty. Mr. Knap receives from the government so much per pound for all finished guns made for the United States service, of which Mr. Knap states he regards one cent per pound as the price charged for the patented invention.

Admiral Dahlgren testifies that he has never received anything in the nature of "royalty" for the guns made according to the principles of his invention.

Mr. Parrott testifies that he never has charged anything for his invention; that he has charged only what he deems a fair manufacturer's profit.

Mr. Ames has made but twenty-one guns for the government; six upon an order from the Navy Department, and fifteen upon an order from the President. He does not appear to have charged anything for his invention, charging so much per pound for his guns.

The proportion of rifled guns to those with smooth bores, used in the navy, is much smaller than those used in the army. The difficulty of obtaining accuracy of fire upon a vessel in motion renders the rifled gun less efficient when used at sea than when used upon land. The projectile from a smooth-bore, except within point-blank range, is fired so as to ricochet upon the water, and it continues its flight in a straight line until it stops. The projectile from a rifled gun, when it strikes the water, ricochets at an angle from the direct line, sometimes almost at right angles, and it is therefore less reliable at long range. There does not appear to be any want of rifled guns in the naval service, as compared with the number of smooth-bore guns.

The guns herein referred to, except the Ames gun, have been and are now being introduced into both the land and naval service as rapidly as the means of manufacturing them will allow, and the demands of the service require.

There are many matters of detail in connexion with the heavy ordnance now in use in this country, as well as that used by other nations, for which your committee would refer to the testimony herewith submitted, in which they are stated at length.

Your committee concur with the Navy Department in opinion as to the importance and necessity of securing a gun possessing the qualities found in the Ames gun; more especially in view of future wars with foreign nations, and the means of offence and defence required to prosecute such wars successfully.

In conclusion, your committee would therefore recommend that Congress immediately adopt such measures as will enable the War and Navy Departments to obtain and introduce into the service wrought-iron guns, especially of large calibre, at as early a day as practicable.

All of which is respectfully submitted.

B. F. WADE, *Chairman.*

TESTIMONY.



WASHINGTON, D. C., January 27, 1864.

Brigadier General GEORGE D. RAMSAY sworn and examined.

By the chairman :

Question. What is your rank and position in the service ?

Answer. I am a brigadier general and chief of ordnance.

(The resolution of the Senate of January 25, 1864, in relation to ordnance, was read to the witness.)

Question. What do you say of the character and efficiency of the heavy ordnance now provided for the armament of our fortifications ?

Answer. I should say very good—of a superior character ; and that it will compare favorably, in my judgment, with any known ordnance.

Question. Do you know the amount of “royalty” paid, and to whom, for the use of patents in connexion with heavy ordnance ?

Answer. With regard to that, I know nothing personally ; all that I know is derived from the report of the commission of which Mr. Holt was president. I think the whole story appears in the report, and to which I beg leave to refer. By this report it appears that the original patent to (then) Captain Rodman bears date August 14, 1847, “for a new and useful improvement in casting ordnance, &c.” The entire interest in said patent was vested by said Rodman in Charles Knap, of Pittsburg, Mr. Knap agreeing to pay to Captain Rodman the full sum of one-half of one cent per pound of the finished weight of cannon, and other castings, on which Knap may receive a royalty for use of said patent. As I understand it, no *direct* royalty is paid on the part of the United States ; but that in consideration of the superior value of ordnance manufactured under this patent, Mr. Secretary Floyd directed this mode of casting heavy guns to be adopted, and paid for at the rate of 20 per cent. additional.

[*Extract from report of the commission on ordnance and ordnance stores, page 568:*]

“November 16, 1859, without the recommendation of the Ordnance board (required by article 1377, General Regulations of the Army, edition 1861,) the then Secretary of War, Mr. J. B. Floyd, directed the adoption of this mode of casting heavy guns, ordering that arrangements should be made to cast all heavy cannon after the ‘Rodman plan,’ and that ‘the free use of the right to cast cannon for the land service, after this plan, should be secured by the Ordnance Bureau to each founder, by the payment from the appropriation for armament of fortifications, for such use, of twenty per cent. upon the cost of each gun, to Mr. Charles Knap, the proprietor of the patent. The price for finished cannon at the foundries will remain the same as now paid.’ A copy of this order was transmitted to all the founders then engaged in manufacturing cannon for the United States ; and in 1860 thirty-nine 8-inch columbiads were cast after this plan at the Fort Pitt foundry, and were paid for at the rate of 6½ cents per pound, the usual price established some years previously ; and Mr. Charles Knap, the proprietor of the patent, was paid, in addition, \$3,037 68, being twenty per cent. upon the cost of twenty-six of these cannon. The account for the patent fee upon the remaining thirteen of these guns, rendered later by Mr. Knap, was disallowed by de-

cision of the Secretary of War *ad interim*, Mr. J. Holt, January 21, 1861, being 'regarded as incompatible with the — section of the act of June 23, 1860.' Messrs. Knap, Rudd & Co. were accordingly notified that the 'order of November 16, 1859, was revoked, and no payment on account of patent fees would be made by the United States.' No other founders than the proprietors of the Fort Pitt foundry have ever cast guns under the 'Rodman plan,' and no other payment has been made, expressly as patent fees, than the one above stated.

"Mr. Knap protested against the revocation of the order of November 16, 1859, and as the third section of the act of June 23, 1860, was repealed on the 21st of February, 1861, the basis upon which this payment was denied no longer exists. To complete the history of the case, as shown before the commission, it should be here stated, that in August, 1861, Captain Rodman applied for and obtained an extension, for seven years, of his original patent grant, which would have expired in that month.

"In December, 1861, the Chief of Ordnance, finding it necessary to give immediate orders for casting, and having recommendations from officers of the department the most practiced in experimental firing with heavy cannon, favorable to Rodman's plan, submitted the subject to a board of officers, composed of Brevet Major Dyer, Captain Rodman, and Captain Benton, directing them to 'fix a suitable price to be paid for 8-inch and 10-inch columbiads.' December 19, 1861, the board reported that: First. They consider it important that all pieces of these calibres should be cooled from the interior in casting. Second. In view of the fact that the Navy Department pays $7\frac{7}{10}\%$ and $8\frac{2}{10}\%$ cents per pound for its 9 and 11-inch guns, respectively, the undersigned consider that $7\frac{8}{10}\%$ cents per pound is fair and reasonable for 8-inch and 10-inch columbiads cast hollow, more especially as they consider the latter named cannon more durable than the former. The undersigned are prepared to extend the foregoing recommendation to all cast-iron cannon made by direction of the ordnance department."

This continued to be paid until 21st January, 1861. On December 22, 1861, new orders were given for columbiads at $7\frac{1}{10}\%$ cents per pound without specifying royalty; and January 13, 1863, $9\frac{1}{4}\%$ cents was paid in consequence of advanced prices.

Question In what does the patent consist in this Rodman gun for which this royalty is paid by the government to Mr. Knap; and what does the difference consist between that gun and guns cast in the common or ordinary mode?

Answer. Heretofore all cannon were cast solid and allowed to cool in the casting-pit. In this way the cooling of the fluid metal from the exterior extended gradually towards the inside, which was the last part that solidified. The shrinkage by this mode of cooling tended to separate the interior layers of metal from the exterior. In Rodman's plan, the patent consists of cooling from the interior and keeping the outside hot; the shrinkage begins on the inside of the mass, and each layer of metal as it cools shrinks upon the nearest interior layer, thus binding all the successive layers together.

Question Does the advantage of the Rodman plan consist in the fact that the gun is cast hollow with a stream of cold water poured through the inside?

Answer. Yes, as regards the casting. But the Rodman gun embraces more than this—the exterior form. Formerly guns were in their exterior form a series of sections of straight lines, called reinforces—somewhat analogous to the joints of a telescope when drawn out—but the Rodman gun (which the witness illustrated by a diagram on a piece of paper) gives a curved section. The thickness at the seat of the charge in cast-iron guns is a little more than the diameter of bore, gradually tapering to the muzzle. Some twenty years ago, the late Colonel Bomford instituted a series of interesting and original experiments to determine the expansive force with which fired gunpowder acts at

different points along the bore of the gun, and with the view of ascertaining the requisite curve of resistance; that is to say, at what points the metal received the greatest strain, and consequently where the greatest thickness was necessary. From these experiments the columbiad—a gun so called—originated, and to which may be traced the French Paixhan gun. The columbiads were originally made with chambers, and are now used for shot or shell. Colonel Bomford did not pursue his investigations beyond determining the above facts. These experiments satisfactorily show that the greatest force of the charge is exerted on the part of the gun which is situated in rear of the centre of the ball, and that the force diminishes rapidly as the ball moves forward from its original position.

Question. When was this investigation?

Answer. About 1843. It is understood that a French officer, General Paixhan, when on a visit to this country, was made acquainted with the experiments of Colonel Bomford, and on returning home he introduced a similar gun into the French service, the Paixhan gun, as a shell gun.

Question. Then I understand you the principle of the gun is an old one?

Answer. Not the principle of cooling from the interior.

Question. The shape of the gun?

Answer. This shape of gun is yet somewhat a matter of contention. It matters not what the shape of the gun is, within certain limits, if cast on correct principles.

Question. I understand you that this Rodman gun was shaped after the experiments of Colonel Bomford to ascertain where the greatest strain would come?

Answer. Yes, sir. But whether Captain Rodman had these in view when he investigated the subject, (which investigation will be found in a work of high reputation on experiments on metals for cannon and cannon powder by Captain Rodman,) I am not prepared to say. As to the shape of the gun, Commander Dahlgren, in a letter to Secretary Floyd, accused Captain Rodman of plagiarism, on the completion of his (Rodman's) 15-inch, and which led to a correspondence between these officers. Rodman's gun conforms more in exterior shape to the columbiad than the Dahlgren.

Question. Are our fortifications supplied with the Rodman gun?

Answer. Yes, sir, as far as we have been enabled. The armament is going on as fast as possible.

Question. What is the weight of the ball of the 15-inch gun, the solid shot?

Answer. About 430. The shell is 320.

Question. Is there any rule by which the weight of the powder is proportioned to the weight of the ball? If so, what is the proportion?

Answer. With rifled guns we use $\frac{1}{10}$ the weight of the ball. For smooth-bores, up to 42-pounders, $\frac{1}{4}$ the weight of the ball; but for breaching purposes it may be $\frac{1}{3}$, or more.

Question. What quantity of powder would be used in the Rodman gun for the 400-pounder ball?

Answer. For the larger guns, from about $\frac{1}{4}$ to $\frac{1}{3}$ the weight of ball.

Question. When the gun is rifled, the proportion between the ball and powder is different from what it is in the smooth-bore gun?

Answer. Yes, sir, about $\frac{1}{10}$ for the rifle.

Question. It has been said that the great 15-inch guns would not stand a sufficiency of powder to propel the shot. Do you know how it is?

Answer. It will stand an ample sufficiency, and has stood charges of 40, 45, and 50 and 60 pounds of powder, propelling the projectile 5,018 yards, or within a few yards of three miles. It is a mistaken notion, much entertained by those ignorant or inexperienced in the science of gunnery, that an increase of the pow-

der charge increases the velocity and range of the ball. This is true up to certain limits, which can be ascertained only by practical trial for each calibre; in other words, there is a *maximum* effective charge of powder for each, any increase beyond which impairs the velocity and range of the projectile, because it introduces powder which is not burnt, but acts as a cushion between the propelling power of the exploded gunpowder and the ball.

Question. We would like to have all the information you can furnish from your office.

Answer. Yes, sir.

Question. There was one point referred to in the resolution—the proof of guns. I would like to know about that.

Answer. The smooth-bores are fired three times, with charges somewhat greater than service charge of powder and ball. Rifled guns are fired the same—Parrott guns ten times, with service charge. The rifled guns require more firing to test them, in order to judge whether the projectile and the grooves work satisfactorily together. The service charge is the one ordinarily used. From the bursting of some of the rifled guns before Charleston, I was apprehensive the charges were too heavy, and wrote to General Gillmore on the subject, but he did not think it advisable to reduce them at that time. It may be said of the rifled guns, that we were called upon to introduce the rifled system in time of war, suddenly, and without the facilities for practical experiment. We have no government arsenal, or convenient place adequate to proper trials for range, penetration, &c. There is no place that I am aware of, under our control, for extensive land range, and for that reason my predecessor recommended, at the last session of Congress, the purchase of a tract of land near New York, on the New Jersey marshes, for this purpose, and which presented an uninterrupted and secure range of several miles. We have had a good deal of practice with field and the 4½-inch rifled guns at the Washington arsenal, but necessarily over the water, rendering the experiments unsatisfactory both as to ascertaining penetration, correctness of flight, &c., of the projectiles, and of many other elements necessary in judging of what constitutes a good rifle gun and a good projectile.

Question. I understand you to say that our fortifications are being armed with the Rodman gun?

Answer. Yes, sir, and also with the Parrott.

Question. From 10-inch up to 15-inch guns?

Answer. Yes, sir, I have a statement here which embraces the whole matter.

Question. You consider the Rodman gun the best gun now in use?

Answer. Yes, so far as guns made entirely of cast iron are concerned.

Question. What tests have been applied to the Rodman gun?

Answer. First, there is the preliminary test of ores, which embrace all of the scientific investigations deemed necessary. Castings from the ores selected are tested for density and tenacity. Experiments have established standards below which guns are not received. Then comes the powder-proof. The only proof to which guns were formerly subjected was by using excessive charges; but this was found to be objectionable, and not reliable, as there was no assurance that after all the trials with heavy charges the gun would not, as often happened, burst with the ordinary service charge. Confidence was greatly impaired, and many serious accidents from bursting ensued. I refer to guns cast solid. The theory of Captain Rodman being undoubtedly correct, experiments were made in order to verify or refute it in a practical manner. Several sets of cannon of the same form and calibre were cast, part in the ordinary method of casting solid and cooling from the exterior, and the same number on Rodman's plan. These were fired alternately, alongside of each other, with charges of powder and ball of the same weight and kind, and continued until one or other class of cannon gave way under the repeated firing. The result of

these trials on several sets of cannon showed conclusively a far greater endurance for the Rodman gun—more than three hundred per cent. greater than those cast in the ordinary way; that is to say, we could rely on getting as much firing from *one* Rodman gun as from three guns cast solid in the usual way. Besides this greater durability, the Rodman gun possesses the greater advantage of reliability in use; that is to say, being served without danger to the men standing by it from bursting of the piece.

Question. The powder test is the test by powder and ball—the service charge?

Answer. Yes, sir; and when a new kind of gun or ore is introduced, the trial is one thousand rounds.

Question. What difficulty is there in applying a satisfactory test to the Rodman and Parrott guns, for instance, to ascertain which is the best gun?

Answer. The original Parrott gun was, I believe, a 10-pounder, calibre 2.9 inches; the 300-pounder is now the largest. There would be no difficulty in instituting the comparison referred to, provided that guns corresponding in every respect as to size and weight were fired with the same charge and projectile. Parrott's is a rifled gun. Only two Rodman guns have been rifled, an 8-inch and 12-inch. These are now under experiment at Fort Monroe.

Question. What is the difference in construction between the Parrott and the Rodman gun?

Answer. The Parrott gun is (thus far) cast solid—of peculiar form, and rifled—and a wrought-iron jacket is shrunk on about the seat of the charge, to impart greater strength. The Rodman is cast hollow, as before described.

Question. I cannot myself see why it would not be easy to take a 100-pounder Parrott gun, for instance, and a 100-pounder Rodman, and subject them to certain tests of powder and ball, and ascertain which is really the most energetic gun, and which will stand the most discharges.

Answer. There would be no difficulty about it, all things equal. Some of the Parrott guns have burst before Charleston. This, however, is ascribed to various causes, one of which is the frequent explosion of the shell in the gun, and the introduction of sand into the bore.

Question. That would be no evidence of the power and strength of the gun when properly fired?

Answer. No, sir.

Question. The Parrott gun is a rifled gun?

Answer. The Parrott gun is a rifled gun, and of high reputation.

Question. Is more powder in proportion to the ball used in the Parrott than would be necessary for a Rodman gun if rifled?

Answer. You can make no comparison with smooth-bore and rifle; but supposing both guns rifled, and to correspond—that is, using the same projectile and fired under the same circumstances—the charges of powder would be the same. The 8-inch Rodman has a 64-pound ball and 10 pounds of powder, and the Parrott 8-inch (200-pounder) fires a projectile of 150 pounds and 16 pounds of powder. The Rodman 8-inch weighs 9,000 pounds; the Parrott rifled, 16,000 pounds.

Question. Then you do not give any preference to the Rodman gun over the Parrott gun, but are getting both as fast as you can?

Answer. No preference in orders given for guns is shown. We have been and are getting both kinds as fast as we can. Unlimited orders have been given to all the founders making guns. The entire capacity of the country has been called into requisition to meet the demands of the service. Everything has been done on the part of the government so far as I am advised.

Question. Is General Gillmore using the Parrott gun entirely for his long range?

Answer. Yes, sir.

Question. While the Rodman gun is on board the fleet?

Answer. The iron-clads off Charleston are armed with 15-inch navy guns, (cast on the Rodman principle,) 11-inch Dahlgren, and the Parrott rifles. The wooden vessels of the fleet are variously armed.

Question. Describe the Dahlgren gun and the Rodman gun, and its advantage over the Rodman gun or columbiad.

Answer. The Dahlgren gun is cast solid and cooled from the exterior. The diameter of the rough casting at the chase is much greater than that of the finished gun; the surplus metal is turned off in the lathe. The Rodman gun and the columbiads are cast hollow and cooled from the interior. The advantages of one form of gun over another is an open question; and it matters not, within certain limits, if the gun is cast on correct principles, such as Rodman's, as before stated. But as to the advantages of *casting* very heavy guns on Rodman's plan, the navy Bureau of Ordnance has shown its confidence in the method by having them so cast at the present time.

Question. Has either one of those guns any advantage over the other in actual use and practice?

Answer. In practice the Rodman gun cast hollow, in my opinion, must have decided advantages as to endurance. As to range, this will depend upon the circumstances under which they are fired.

Question. Is there a gun called the Ames gun?

Answer. No such gun in the land service. We have field bronze guns made by Ames, at Chicopee, Massachusetts. Horatio Ames made a 50-pound wrought-iron gun, which was tried at the navy yard. He offered to furnish this department with—

50	pounds,	5,500	pounds, at 75 cents	\$4,125
80	"	7,700	" at 75 cents	5,775
100	"	11,000	" at 85 cents	9,350
200	"	19,000	" at \$1	19,000
300	"	27,000	" at \$1	27,000

Question. Have we a wrought-iron gun; and if so, who is the inventor of it?

Answer. We have a 3-inch wrought-iron field gun known as the ordnance gun; it is made at Phoenixville, Pennsylvania. Its calibre is 3 inches, and its weight 820 pounds.

Question. What is the Armstrong—an English gun?

Answer. It is an English gun. The body of the piece is made up by welding together several wrought-iron tubes, and is formed by twisting a square bar of iron around a mandril and welding the edges together. To strengthen the barrel at and in rear of the trunnions it is enveloped with two additional thicknesses or tubes. The outer tube, like the inner one, consists of spiral coils; but the intermediate tube is formed of an iron slab bent into a circular shape and welded at the edges. The breech is closed with a vent-piece, held in its place by a breech-screw which supports it from behind.

Question. The old-fashioned Armstrong gun is a wrought-iron?

Answer. The Armstrong gun is made of wrought-iron.

Question. A breech-loading gun?

Answer. The original gun was breech-loading. The 600-pounder is, I believe, muzzle loading.

Question. The trial has been, I suppose, to see if they could make the side of a ship strong enough to resist any ball that you can propel against it?

Answer. Perhaps nothing will be more productive of change in these matters than the introduction of iron-clads. For iron-clads at a moderate distance, the smooth-bore gun, on account of the greater momentum of the ball and its crushing effects, would be more effective than rifled guns. The rifled projectile will

go further and more accurately. Experiments on iron plates now going on will no doubt disclose to what extent they can be relied upon as armor for ships or forts. I doubt whether any iron-clad vessel capable of floating can resist the effects of the 15-inch gun.

Question. You are of opinion that the cast-iron 15-inch gun is a useful gun?

Answer. Yes; a very useful gun, on account of the weight of the projectile, its force, and range.

Question. In stating that our fortifications are now being armed with these Rodman guns, you do not mean, I suppose, that the old guns are displaced by them?

Answer. Not altogether. And I will state here, that many years ago, and just prior to the Mexican war, a close examination was made of all the army guns in the United States. Our gun-yards were stocked with guns of all kinds and patterns. A series of experiments was then instituted, to ascertain the relative effects of tenacity and endurance. The guns were first theoretically classified—1, 2, and 3. Subsequently, at Fortress Monroe, I fired, I think, some 12,000 rounds, to test this classification; and I made a report upon the subject. The object was to determine whether the endurance of the guns was in the ratio of the tenacity of the metal, as previously determined from specimens taken from the muzzle of the guns. All of the *old* guns in the forts deemed serviceable are now being rifled and some banded.

Question. Judging from all your knowledge of all the guns in Europe and America, you think none are better than the Rodman and Parrott guns?

Answer. I do not think that any method of casting guns has proved better than or so good as the method adopted by Major Rodman. We have every reason to believe that our own guns are quite as good, if not better than the European.

Question. Can you give us any description of what is called the Whitworth gun—an English gun?

Answer. The Whitworth gun is a wrought-iron, rifled, breech-loading gun. It has a hexagonal bore, and its projectile is a bolt, correspondingly hexagonal. It is a very ingenious and beautifully made gun. It is liable to get out of working order in its breech arrangements, from the peculiar construction of the screw, which requires very perfect mechanism. This screw arrangement becomes foul by escape of gas, and it is sometimes difficult to close the breech. There are also muzzle-loading Whitworth guns.

Question. And the heating of the gun by firing would affect it, I suppose?

Answer. Of course. In the models all the breech-loading guns seem to work very well; but when you apply the principle to large masses of metal it becomes difficult to make the parts work easily.

Question. What about the Blakely gun?

Answer. That is made a little after the manner of the Parrott gun. I think it has a jacket of wrought-iron shrunk on it, commencing at the trunnions and embracing the entire rear of the gun.

Question. That is a wrought-iron gun?

Answer. Yes, sir. There are guns which are called semi-steel, and there are guns of wrought-iron, prepared in various ways.

Question. Is it your opinion that our guns are equal to any they have in Europe?

Answer. They are equal, if not better, as I have before stated. I know nothing of the Armstrong 600-pounder. Foreign attention is certainly directed to the improvements and experiments going on in this country. There are constantly foreign officers visiting our military establishments and studying our system.

Question. You have stated the tests to which these guns were subjected. What reason is there for believing that these tests are satisfactory; what reason have you for placing confidence in them?

Answer. The reliability of the experiments, as shown by the endurance of the guns.

Question. You think they are satisfactory?

Answer. Yes, sir; every effort has been made to render them so.

Question. What proportion of our sea and land armament is of rifled ordnance, and when were rifled guns introduced into service?

Answer. I should have to refer to the records to answer the first part of your question. As to the introduction of rifled ordnance, my first recollection of them was at the battle of Bull Run.

Question. What proportion of the land ordnance is rifled, so far as you know?

Answer. With regard to the old guns forming a portion of the armament of the fortifications, we are now rifling every gun along the sea-board. We are at this very moment rifling the guns at Portland, Portsmouth, and Boston. The 24 and 32-pounders are simply rifled; but to the 42-pounders we are applying the wrought-iron jacket in addition upon the Parrott principle, with the Parrott increasing twist. Experiments have shown that the 24 and 32-pounders have sufficient endurance, without going to the expense of banding.

Question. The intention is to have all the guns rifled?

Answer. Yes, the old guns, to include the 42-pounders—not the Rodman's. Some of them, the 8 and 12-inch, have been rifled for experiment.

Question. Does it not weaken ordnance to some extent to rifle it?

Answer. Yes, to some extent; but we are enabled to make reliable rifled guns, even from those originally smooth-bore—as, for example, a third-class 32-pounder gun, rifled by Captain Parrott, and fired with his own projectile, 64 pounds, (double the weight of the 32-pound ball,) and with 6 pounds of powder, withstood 1,000 rounds. This gun was not banded; its tenacity was not more than 16,000 or 20,000, the standard being about 30,000 pounds. It is doubtful whether this gun, before being rifled, would have shown greater endurance with its own proper service charge with round ball. We consider a gun a good gun that will stand 1,000 rounds.

Question. At what time did these rifled guns come into use?

Answer. We had several batteries at the first battle of Bull Run; and we have since then furnished them with all the rapidity that the foundries could supply them. We have taken all the smooth-bore guns out of the field, and substituted rifled guns as fast as we could get them. At the battle of Bull Run we had a 2 $\frac{1}{2}$ -inch, that is, a 10-pounder battery, a 20-pounder battery, and one 30-pounder gun, which was lost.

Question. Whoever drew up this resolution supposed there had been some delay in introducing these rifled guns, and we are instructed to inquire into the cause of that delay?

Answer. I know of no delay whatever. Mr. Parrott commenced making field rifled guns—

Question. The language of the resolution is: “and the cause of the delay pertaining thereto.”

Answer. I know nothing about that, of course. I had no administrative duties whatever to perform at that time not pertaining to Washington arsenal. I know that now we are changing all the old guns to rifled guns.

Question. With what expedition are you making the change?

Answer. We are changing them with the utmost rapidity. We have several rifling machines at different places. We have one making for California; and I have ordered one to be sent to Fort Washington, to rifle the guns there. The principle is to be introduced wherever it can be to advantage.

Question. You say you are rifling all your guns. Are you rifling all the guns to be used in the field?

Answer. We have been using the smooth-bore light 12-pounder bronze guns, a very effective gun. I think the rifle principle will be generally adopted for all.

Question. Is the rifled gun as good for grape, canister, and spherical case as the other?

Answer. We do not use grape-shot in field-guns; we use canister, and in rifled guns with good effect. It is very effective when used in the light 12-pounder. We use spherical case in all field-guns.

Question by Mr. Odell. At what foundries, and where located, are the guns made? What are the names of those with whom contracts and from whom purchases have been made? What is the number of guns of each size made by each founder, and at what prices? What amount, and at what rates, has been paid up to the present time as "royalty," and to whom? What outstanding contracts are there, and with whom? At what places have the old guns been rifled, and at what cost, and has the cost been uniform? What arrangements have been made to supply future wants of the service by contract or otherwise, and at what rates? Is "royalty" paid for any of the material or appurtenances used in connexion with heavy ordnance? If so, to whom, and the rates paid? The same general questions in reference to shot and shell used.

Mr. Gooch suggested that the witness be furnished with a copy of the resolution in relation to the present inquiry, his testimony as far as given, (when written out.) together with the questions submitted by Mr. Odell, and prepare such reply as he may deem necessary, including documents, &c.

The suggestion was adopted.

The following is a copy of the resolution :

"Resolved, That the Committee on the Conduct of the War be instructed to inquire into the character and efficiency of the heavy ordnance now provided for the armament of fortifications; the mode of fabrication; the amount of "royalty" paid, and to whom, for the use of a patent in the manufacture; the tests to which these guns are subjected when received into service; the reasons for believing the tests satisfactory; what proportion of our sea and land armament is of rifled ordnance; when rifled guns were introduced, and the cause of the delay pertaining thereto."

PAPERS ACCOMPANYING THE TESTIMONY.

Statement (marked A) of columbiads and mortars purchased from January 1, 1860, to February 1, 1864, with cost, &c.

Statement (marked B) of ordnance cast on Rodman's plan, with amount due on orders, &c.

Extract (marked C) from letter to the Secretary of War, showing the number of guns required for the armament of fortifications; the estimated capacity of foundries in 1864 for heavy guns, their cost, orders recommended, &c., &c.

Table (marked D) showing the mechanical tests, weights of charges and endurance of guns cast up to the present time, for the purpose of determining the relative merits of the solid and hollow modes of casting.

Statement (marked E) showing the cost of rifling cannon in 1861, by J. T. Ames.

Statement (marked F) showing the cost of rifling old smooth-bore cannon.

A.

Columbiads and mortars purchased from January 1, 1860, to February 1, 1864.

Time.	From whom.	Place of manufacture.	No.	Weight.	Price.	Amount.
<i>8-inch columbiads.</i>						
1860..	Knap, Rudd & Co.	Pittsburg, Pa.	26	233, 703	\$0 06½	\$15, 190 70
1861..	do	do	78	674, 993	06½	43, 674 32
1st half 1863..	do	do	16	135, 358	09½	13, 197 40
2d half 1863..	do	do	19	161, 198	09½	15, 716 78
Total			139	1, 205, 252		87, 979 40
<i>10-inch columbiads.</i>						
1861..	Knap, Rudd & Co.	Pittsburg, Pa.	10	151, 735	06½	9, 862 77
1st half 1862..	do	do	21	314, 181	07 8-10	24, 506 10
2d half 1862..	do	do	33	491, 079	07 8-10	38, 304 22
1st half 1863..	do	do	25	372, 735	07 8-10	29, 073 31
Do	do	do	29	432, 784	09½	42, 196 41
2d half 1863..	do	do	89	1, 330, 961	09½	129, 768 74
Do	Cyrus Alger & Co.	Boston, Mass.	2	30, 310	09½	2, 955 22
Total			209	3, 123, 785		276, 666 77
<i>10-inch Rodman.</i>						
2d half 1863..	Cyrus Alger & Co.	Boston, Mass.	7	105, 667	09½	10, 295 99
Do	Seyfort, McManus & Co.	Reading, Pa.	1	15, 174	09½	1, 479 46
Total			8	120, 841		11, 775 45
<i>13-inch columbiads.</i>						
1st half 1863..	Knap, Rudd & Co.	Pittsburg, Pa.	1	33, 515	4, 500 each.	4, 500 00
<i>15-inch columbiads.</i>						
2d half 1862..	Knap, Rudd & Co.	Pittsburg, Pa.	2	98, 198	6, 500 each.	13, 000 00
1st half 1863..	do	do	8	399, 630	6, 500 each.	52, 000 00
2d half 1863..	do	do	24	1, 194, 831	6, 500 each.	156, 000 00
Do	Cyrus Alger & Co.	Boston, Mass.	7	346, 409	6, 500 each.	45, 500 00
1st half 1864..	Charles Knap	Pittsburg, Pa.	2	100, 120	6, 500 each.	13, 000 00
Total			43	2, 139, 188		279, 500 00
<i>15-inch Rodman.</i>						
2d half 1863..	Cyrus Alger & Co.	Boston, Mass.	5	246, 641	6, 500 each.	32, 500 00
1st half 1864..	do	do	11	544, 468	6, 500 each.	71, 500 00
Total			16	791, 109		104, 000 00
<i>9-inch Dahlgren.</i>						
1861..	Knap, Rudd & Co.	Pittsburg, Pa.	16	146, 966	07 2-10	11, 022 45
<i>10-inch mortars, S. C.</i>						
1st half 1862..	Knap, Rudd & Co.	Pittsburg, Pa.	9	16, 957	06½	1, 102 20
1st half 1864..	Charles Knap	do	2	3, 845	06½	249 92
Do	do	do	5	9, 749	09½	850 32
Total			16	30, 551		2, 302 64
<i>13-inch S. C. mortars.</i>						
1861..	Knap, Rudd & Co.	Pittsburg, Pa.	21	224, 440	06½	23, 590 22
1st half 1862..	do	do	9	154, 193	06½	10, 022 54
Do	do	do	60	1, 031, 272	07 8-10	80, 439 21
Total			90	1, 409, 905		114, 052 07

RECAPITULATION.

	No.	Weight—lbs.	Amount.
8-inch columbiads	139	1,205,252	\$87,979 40
10-inch columbiads	209	3,193,785	276,666 77
10-inch Rodman	8	190,841	11,775 45
13-inch columbiads	1	33,515	4,500 00
15-inch columbiads	43	2,139,188	279,500 00
15-inch Rodman	16	791,109	104,000 00
9-inch Dahlgren	16	146,966	11,022 45
10-inch S. C. mortars	16	30,551	2,302 64
13-inch S. C. mortars	90	1,409,905	114,052 07
Total		9,001,112	891,798 78

B.

Ordnance cast on Rodman's plan, due on orders February 2, 1864.

Date of order.	Manufacturer's name.	Location.	Kind of ordnance.	No. ordered.	Balance due.	
1862.						
March 20.	C. Knap	Pittsburg..	15-inch guns	50	15	June, 1866.
1863.	C. Alger	Boston	15-inch guns	50	33	June, 1866.
Nov. 24.	Seyfert, McManus & Co.	Reading...	15-inch guns	25	25	March, 1866.
					73	
1863.						
July 7.	C. Knap	Pittsburg..	10-in. siege mortars.	34	29	
	C. Alger	Boston	10-in. siege mortars.	16	10	
					39	
1863.						
Jan. 13.	C. Knap	Pittsburg..	8-inch columbiads ..	Unlimited ..		At 1 month's notice from Ordnance Office. The time for delivery of all these guns expires March 1, 1864.
			10-inch columbiads ..	do		
	C. Alger	Boston	8-inch columbiads ..	do		
			10-inch columbiads ..	do		
	Seyfert, McManus & Co.	Reading...	8-inch columbiads ..	do		
			10-inch columbiads ..	do		

C.

Extract from a letter to the Secretary of War.

ORDNANCE OFFICE,
War Department, December 31, 1863.

Sir :

Number of heavy guns required for the armament of the coast and frontier, as per report of the Board of Engineers and Artillery Officers, February, 1862.....	5,622
Of which there are required of 8, 10, and 15-inch	4,800
Required for the defences of Washington, Cincinnati, Nashville, Memphis, Vicksburg, and other points not previously in any estimate, say.....	2,000
Of which there are required of 8, 10, and 15-inch, say	200
Making a total of all kinds, 32-pounders to 15-inch, of	7,622
And of 8, 10, and 15-inch alone, of	5,000
The total number of guns of all kinds from 32-pounders to 15-inch, excluding Parrott's, on hand on the 31st December, 1863, may be stated at	2,211
Of which amount there are of 8, 10, and 15-inch calibres, say	782
Leaving to be provided for, January 1, 1864, of all kinds	5,411
And of 8, 10, and 15-inch, say	4,218

Mr. Parrott's product during the war is not included here, as it is nearly all in current use in siege and field operations, and will probably continue to be used during the war.

The estimated capacity of all the foundries in 1864 for heavy army guns may be stated as follows:

	SMOOTH-BORES.			RIFLED.		
	15-inch.	10-inch.	8-inch.	300-pdr.	200-pdr.	100-pdr.
J. McManus & Co	12	100	50			
C. Knap.....	50	200	50			
C. Alger & Co	50	100				
P. R. Parrott.....				50	100	150
	112	400	100	50	100	150
Total.....	612			300		

We have, therefore, an estimated yearly product of 612 to set off against the 4,218 heavy guns wanted, as during the continuance of the war siege and defensive operations will probably continue to absorb all Parrott's product; it cannot, therefore, at present be taken into the general account.

ORDERS RECOMMENDED.

R. P. Parrott's West Point Foundry.

Calibre.	Entire estimated capacity, 1864.	Army share.	It is proposed to order—	Price.	Total cost.
300-pounder..	80	40	40— 4 per month.....	at \$4,500	\$180,000
200 " ..	200	100	100— 8 "	at 1,900	190,000
100 " ..	300	150	150—12 "	at 1,200	180,000
30 " ..	300	200	100—18 "	at 527	52,700
20 " ..	300	300	50—12 "	at 387	19,350
10 " ..	300	300	150—12 "	at 187	28,050
Total cost.....					650,100

Iron carriages for heavy rifled guns as above.

Number.	Guns.	Price.	Total cost.
	<i>Barbette.</i>		
50	300-pounder....	at \$1,400	\$70,000
100	200 "	at 705	70,500
100	100 "	at 625	62,500
	<i>Casemate.</i>		
50	100-pounder....	at 625	31,250
Total.....			234,250

Parrott projectiles.

Calibre.	No. of guns on hand December 31, 1863.	Ordered as above.	Total guns.	Rounds 250 each.	Cost.
300-pounder	1	40	41	10,250	\$153,750
200 "	5	100	105	26,250	315,000
100 "	100	150	250	62,500	452,000
30 "	200	200	400	90,000	208,000
20 "	250	50	300	75,000	105,000
10 "	300	150	450	112,500	105,750
Total					1,339,500

As these guns and projectiles are patented articles and offered at a more reasonable price than any other rifled guns or projectiles, I have the honor to recommend that the above number of each kind of guns and carriages as indicated be ordered, and that 250 artillery projectiles be supplied with each gun, under such instructions as regards places of delivery as may be given at this office.

Seyforth, McManus & Co., of Reading, Pennsylvania.

Their capacity, as represented by letter of 23d of October, 1863, may be stated as follows:

15-inch guns	1 per month.
10-inch guns	2 per week.
8-inch guns	1 per week.
24-pounder howitzers	2 per week.

These parties have a contract with this department for twenty-five 15-inch guns, dated November 24, 1863, and another for one hundred 24-pounder howitzers, dated November 12, 1863. It is only proposed, therefore, to order from them 8 and 10-inch guns. All guns made up to February 1, 1864, under their order of January 1, 1863, to be taken under that order and a new order to be given for—

100 10-inch, delivered 2 per week, at \$1,477 each	\$147,700
50 8-inch, delivered 1 per week, at \$836 each	41,750
Total cost	189,450

thus taking their whole product for the year 1864.

C. K. Knap, of Pittsburgh, Pennsylvania.

Calibre	Capacity per annum stated, Oct. 22, 1863.	Army share.	Deliver'd in 1863.	Proposed to order.	Total cost.
15-inch	100	50	40	40	\$260,000
10-inch	400	240	at rate of 190	200	295,400
8-inch	240	120	" 50	50	41,750
Total					597,150

Mr. Knap has an order dated March 20, 1862, for fifty 15-inch guns. On the 31st of December, 1863, there will remain eight to be delivered.

It is recommended that this unlimited order of January 13 for 8 and 10-inch Rodman guns be terminated, and that specific orders for forty 15-inch, two hundred 10-inch, and fifty 8-inch be given.

C. Alger & Co., of South Boston.

Calibre.	Capacity for army work reported Oct. 23, 1863.	Delivered in 1863.	It is proposed to order.	Total cost.
15-inch	75	20	.....	.....
10-inch	100	10	100	\$147,000
8-inch .....	.....	.....	.....	.....
Total .....	.....	.....	.....	147,000

C. Alger & Co. have an order for fifty 15-inch guns, dated March 20, 1862, on which, December 31, 1863, there will have been delivered twenty, leaving thirty to be delivered in 1864. It is recommended that their unlimited order of January 13, 1863, be terminated, and that an order be given them for one hundred 10-inch guns at present rates, being their whole army product for the next year.

The Builders' Iron Company, of Providence,

are wholly engaged on army work. Their capacity may be stated at one hundred 10-inch guns per annum.

RECAPITULATION.

Rifled projectiles and carriages.	Rifled, field, and siege guns.	Garrison guns.	Kind.	Cost.
	300	290	Parrott	\$650,175
Rifled projectiles.....	Parrott	1,339,500
Carriages	612	Parrott	234,250
	Rodman	902,700
Total	2,126,625

The carriages for the 612 heavy smooth-bored guns can be made by the Ordnance department in the year 1864 at the following arsenals:

Watertown arsenal.....	350
Washington and Fort Monroe arsenals	200
Watervliet arsenal.....	62
	<u>612</u>

Respectfully submitted.

Hon. E. M. STANTON,
Secretary of War.

GEORGE D. RAMSAY,
Brigadier General, Chief of Ordnance.

D.

Table showing the mechanical tests, weight of charges, and endurance of all the guns cast up to this time, for the purpose of determining the relative merits of the solid and hollow modes of casting.

When cast and proved.	No. of gun.	Calibre.	Weight of charges.		Density of heads.		Tenacity of heads.		No. of times fired.		Remarks.
			Powder.	Shot.	Hollow.	Solid.	Hollow.	Solid.	Hollow.	Solid.	
1849	1	<i>Jack.</i>	<i>Lbs.</i>	<i>Lbs.</i>							
1849	2	8	10	64		7.221		27.014		85	Burst.
1851	3	8	10	64		7.226		27.963		251	Do.
1851	4	8	10	64		7.286		37.984		73	Do.
1851	5	8	10	64		7.286		37.816		1,500	Not broken.
1851	6	10	18	125		7.290		37.129		20	Burst.
1851		10	18	125		7.294		38.513		249	Do.
1852	160	<i>Pds.</i>	8	32		7.981		34.307		1,000	Burst, with 16 lbs. powder and 2 shot, at the 1,021st fire.
1852	161	32	10½	32						90	Do.
			8	32		7.271		33.590		1,000	Do.
		10½		32						6	Burst.
1856	331	<i>Jack.</i>	10	18	125	7.215		31.335		315	Do.
1856	332	10	18	125		7.160		29.770		26	Do.
1857	334	10	14	125		7.172		26.082		1,600	Not broken.
1857	335	10	14	125		7.142		24.454		399	Burst.
1857	983 W. P.	10	14	125		7.235		30.616		169	Burst. West Point Gun.
1858	362	10	14	125		7.201		27.733		2,452	Not broken.
1858	363	10	14	125		7.159		26.038		2,452	Do.

E.

Cost of rifling cannon in 1861 by J. T. Ames.

Calibre.	Number.	Price.	Total cost.
6-pounders.....	10	\$50	\$500
12-pounders.....	3	50	150
12-pounders.....	4	100	400
12-pounders.....	4	100	400
24-pounders.....	30	100	3,000
32-pounders.....	10	100	1,000
42-pounders.....	1	50	50
42-pounders.....	40	100	4,000
Total cost.....			9,500

F.

Statement showing the cost of rifling old smooth-bore cannon at Washington arsenal.

42-POUNDER GUN.

Pay of machinist.....	\$2 50
Pay of helper.....	1 75
Fuel for engine.....	50
Hauling gun to and from machine.....	1 00
Repair and depreciation of machine.....	25
Total cost.....	6 00

Testimony of Captain Henry A. Wise, U. S. N.

WASHINGTON, January 28, 1865.

Captain HENRY A. WISE sworn and examined.

By the chairman :

Question. What is your position in the naval service ?

Answer. I am chief of the Bureau of Naval Ordnance.

Question. What kind of ordnance is now mostly used in the navy ?

Answer. Dahlgren's smooth-bore guns and Parrott's rifled cannon.

Question. What is the proportion of the Dahlgren and of the Parrott ordnance now in use in the navy ?

Answer. The proportion is about one-fifth of the Parrott cannon to the Dahlgren gun and the old-fashioned gun. We have but 36 guns cast on the Rodman plan, all of 15-inch calibre.

Question. Are the Rodman guns all 15-inch ?

Answer. No, sir; the peculiarity of the Rodman gun consists in the method of cooling it from the inside.

Question. What is the principle of the Rodman gun, as it is termed ?

Answer. The Rodman gun, as it is termed, is a gun cast upon a peculiar principle. There is a core of iron in the centre of the mould, and a stream of water is introduced from a hydrant into that core. The metal is poured into the mould around that core, and it is cooled interiorly and exteriorly at the same time. It is assumed that by that means very great strength is obtained for the gun so cast. The water is introduced at the bore of the core, and the head of water from the hydrant causes it to rise in the core to the top, whence it is carried off by a pipe. This process goes on during the process of pouring in and cooling the metal.

Question. So that there is a constant supply of cold water pouring through ?

Answer. Yes, sir. These heavy guns made by that method are much stronger than if made by the method of solid casting. In the solid casting a chill takes place on the outside and the strength is drawn from the centre of the gun, and the more excrescences there are on the casting, moulding, &c., no matter of what form, the more the gun is weakened by them while cooling when cast solid. The casting in a cylindrical form is generally supposed to give more uniform strength. This method of Rodman has gained ground only within the last three years.

Question. Is there any other difference between the Rodman gun and the Dahlgren gun than the mode of making it—of casting it ?

Answer. The form of the Dahlgren gun is somewhat different, in some respects, from guns designed by Major Rodman.

Question. A Dahlgren is cast solid and then bored out ?

Answer. Yes, sir.

Question. And that is the case with the columbiads ?

Answer. Yes, sir; that is the case with the old army gun. There are no Rodman guns, so to speak, in the navy; there is only the Rodman method of making guns.

Question. What tests have been applied to try the strength of these Rodman guns ?

Answer. Our tests and the tests of the army for the 15-inch guns have been three rounds with 40 pounds of the so-called *mammoth* powder, a powder designed by Major Rodman. But that is merely the first proof. We took the first 15-inch gun made for the navy on the Rodman method, brought it here to the Washington navy yard, and have fired it now up to 900 rounds, increasing the charge up to 60 pounds of *cannon* powder.

Question. With a ball or a bolt?

Answer. With a 440-pound ball. The gun still endures as well as a gun possibly could, and we perceive no defects in it.

Question. Is that the proportion between powder and the weight of the ball usually used in guns?

Answer. No, sir. There is a great misapprehension on the part of people generally with regard to the quantity of powder to be used. The powder may be strong or it may be weak; it may exert a very great pressure or it may not. We do not measure its strength proportionally by the quantity we put in, but by its initial velocity and the impulse given to the shot. By putting an ounce or two of fulminate of mercury in the gun we might exert the same force upon the ball as with the charge of 60 pounds of powder, though we could not, perhaps, control it as well, and the effect would be so great upon the gun that it might give way.

Question. In regard to the proportion between the powder and the weight of the ball, there is a difference between the Rodman gun and the Parrott gun?

Answer. Yes, sir; because the one is a smooth-bore gun, and the other is a rifled gun. It is only within the last three months that I have ordered, cast on the Rodman plan, three rifled guns of different kinds.

Question. Of what calibre?

Answer. Of 12-inch, using 600-pounder bolts. They are not of the design and forms of Major Rodman, but they are to be cast upon his principle.

Question. And are to be rifled?

Answer. Yes, sir; I took the best propositions for rifling I could obtain from different parties. From a multitude of forms submitted we selected the three which we thought would produce the best results. The guns are now being rifled, and we intend to try them under precisely the same conditions, and with the same weight of projectile, and the same charge of powder, and that is the only real, actual, practical way of getting at any result in these things.

Question. That test has not yet been applied to these guns?

Answer. No, sir.

Question. Do I understand you that no 15-inch Rodman gun has ever yet been rifled?

Answer. Never. They are about to cast a 20-inch gun this day fortnight; but that will be a smooth-bore.

Question. Are you rifling your old guns now?

Answer. No, sir, not in the navy; and, in my opinion, whoever uses a rifled gun of the old pattern will cause great mischief.

Question. Do you weaken an old gun by rifling it?

Answer. Very much. You have no windage in a rifled gun, and old guns are so weak that they will not stand the pressure.

Question. Do you think that cutting the grooves tends to weaken the gun?

Answer. No, sir, not the mere cutting the grooves.

Question. You have not, then, had an opportunity to form a very definite opinion which of these guns would stand the heaviest charge and be the most durable, the Parrott or the Rodman?

Answer. No, sir; because there never has been but one rifled gun made on Rodman's plan until the three guns I have just ordered—one on his plan, one of Mr. Parrott's, and one of Mr. Atwater's. We chose the three kinds which we thought would produce the best results.

Question. You have described the Rodman gun or method. Please describe the Parrott gun as distinguished from that.

Answer. The Parrott gun is a rifled gun. It consists of a solid casting, which is bored out and rifled, and then it is banded with a coil of wrought-iron around the breech; that is, one continuous coil is shrunk on. They are very

excellent guns—the best, beyond all question, that have yet been brought into service in this or any other navy.

Question. Then these large 15-inch Rodman guns are, as yet, a kind of experiment, are they not?

Answer. The smooth-bore gun is not still an experiment, because we have a number of them in use, and they have done great service at Charleston and elsewhere. A 15-inch shot destroyed the Atlanta; and I may repeat, one of these guns has been fired here about 900 rounds under very great strain, and still stands exceedingly well. Therefore, I should say that the result had been very successful. It has been so much so that the English have taken the alarm, and have got up a 600-pounder, which they have fired a few times.

Question. Is that 600-pounder on the Parrott principle?

Answer. It is not on the Parrott principle, but rather on the Armstrong principle; somewhat different.

Question. The Parrott gun has always been a rifled gun?

Answer. Yes, sir.

Question. Wherein does the Dahlgren gun differ from the columbiad?

Answer. It differs from the columbiad in its form—in the distribution of the metal.

Question. In the external form of it?

Answer. Yes, sir; and it has two vents. The distribution of metal in the Dahlgren gun gives the very best form in which a gun can be made to attain the greatest strength. In other words, Dahlgren assumes to take a certain weight of metal—we will say, 10,000 pounds—and he will make that metal into a gun of stronger form than any gun that has previously been devised of the same weight of metal. The army and navy guns now correspond in their general outward form, with some exceptions, which are necessary for the different working of a gun on a ship and on land.

Question. You say you consider the Dahlgren the best gun, but you have not yet stated exactly how it differs from the columbiad.

Answer. Nearly in its exterior form. The columbiad, until very recently, was more in the form of a Doric column, with very little difference in the diameter from the muzzle to the breech; it tapers in a slight degree along the whole length. The new columbiad corresponds in form to that of Dahlgren in having the metal in a cylindrical form around the breech, and tapering rather suddenly towards the muzzle.

Question. It is found that the greatest strain is near where the charge lies?

Answer. Invariably; Dahlgren's guns hitherto have all been cast solid.

Question. And so with the columbiads, I suppose?

Answer. Yes, sir; I believe, however, that they now propose, since some recent experiments, to cast them hollow.

By Mr. Gooch:

Question. On the Rodman plan?

Answer. Yes, sir.

By the chairman:

Question. Are all the guns now being made for the navy rifled?

Answer. No, sir; we ourselves make smooth-bores. The only guns we rifle are the bronze guns, but we buy from Mr. Parrott his rifled gun. We do not make large rifled guns.

Question. What I mean is, that you are procuring for the navy rifled guns as fast as you can, are you not?

Answer. Yes, sir, from Mr. Parrott; no one else.

Question. What is the calibre of the guns you are now procuring?

Answer. We are making 9, 10, and 11-inch Dahlgren guns, and a 15-inch gun after Rodman's method, and we are buying from Mr. Parrott his 20, 30, 60, 100, and 150-pounders. We have now in service about 650 of the Parrott guns.

Question. Have they reached as high as a 300-pounder Parrott yet?

Answer. The army have two of them which are now in use on Morris island, but we never have had one.

Question. The 150-pounder is the largest in the navy?

Answer. Yes, sir.

Question. When was this new method of making guns first discovered—this Rodman principle?

Answer. I think experiments were first made by Major Rodman in 1849 or 1850; I am not very sure about the precise date.

Question. Was that an invention purely of this country, or had it been previously known in Europe?

Answer. I think it has been conceded in Europe and here that it was purely Major Rodman's invention.

Question. Where are those Rodman guns constructed?

Answer. They are made at Alger's foundry, in South Boston, at the Fort Pitt foundry, in Pittsburg, and also at the Scott foundry, in Reading, Pennsylvania.

Question. What amount of "royalty" is paid, and to whom, for the construction of those guns?

Answer. I do not know; we never have paid a penny; but I presume that the "royalty," if any is paid, is paid to the Fort Pitt founders, who, as I understood, bought the patent from Major Rodman years ago.

Question. Do you intend to say that the government does not pay any "royalty"?

Answer. Not for navy ordnance; never a penny.

Question. Is it paid by some other bureau or department?

Answer. Not to my knowledge; it is impossible.

Question. There is none paid, then?

Answer. We pay so much a pound for the gun.

Question. Does not that include a certain amount of "royalty," as they call it, for the invention?

Answer. It may be so, but we do not pay it.

By Mr. Harding:

Question. You do not pay "royalty" as such, but you pay a certain price for a gun?

Answer. We pay a certain price to Mr. Parrott, to the Fort Pitt foundry, and to Mr. Alger.

By the chairman:

Question. Then you do not know that "royalty" is paid by the government upon the manufacture of any of these guns?

Answer. No, sir; I do not.

Question. Not in that name, or in any other way?

Answer. It might be included in the general price, but we do not recognize it, and know nothing about it; we merely pay so much for a gun. Mr. Parrott has his own patents, and we pay him so many cents per pound for his guns.

Question. Are Rodman's and Parrott's guns both patented?

Answer. They are; Mr. Parrott's patents, however, I believe are contested; not so with Major Rodman's patent. I have seen his patent, because we contemplated casting guns upon a similar principle; but instead of introducing water, we cool the castings by means of atmospheric air. But upon looking at the patent we found that it comprehended every description of process by which a gun can be cooled from the interior.

Question. Is there any other satisfactory test of the strength of a gun except by actual trial of powder and ball?

Answer. There is the water test, which we apply to all our guns; a certain pressure.

Question. Do you regard that as satisfactory a test as the powder and ball?

Answer. No, sir, not so satisfactory. But we judge more from the metal, and the treatment of it, and watching the various stages of the manufacture of a gun until it is completed. Then we have also certain mechanical tests which we apply.

Question. Will you state specifically what tests you apply to these guns—each in its order?

Answer. For the Dahlgren gun we enter into an agreement or contract with a founder to make, say 50 guns. We then determine the quality of his metal, and he is obliged to lay in enough of that metal to make 50 guns of the calibre agreed upon. We watch the treatment of his first gun closely, as in fact every other; but we select one of the first five guns and subject it to a powder proof of the ordinary service charge, up to 1,000 rounds. If the gun does not break or show signs of undoubted weakness under this firing, then we pay for the gun and lay it aside as the *standard*. The remaining 49 guns, which must all conform to the standard, we prove by firing 10 service rounds with shot.

Question. The "service charge" is the charge usually used in action?

Answer. Yes, sir; by the former system of proving, where we put in double charges, and double-shotted the gun, and fired it 10 times, at the last fire, though the gun did not burst, it might become so weak that it would break by the touch of a hammer; almost fall in pieces of itself. We have abandoned that system.

Question. Because it injured the gun?

Answer. It injured the gun very much.

Question. Do you contract with the founders to use any particular quality of iron in the construction of these guns?

Answer. Yes, sir.

Question. Where does the iron come from?

Answer. From various parts of the country. We find good iron in Massachusetts; we find excellent iron in the Bloomfield range in Pennsylvania; Tennessee iron is excellent iron; the Reading iron is excellent; all good irons; better irons than any known abroad.

Question. Have you ever tried any iron from Lake Superior?

Answer. We have tried to get enough of it, for trial, and we have obtained one block; but it was made in a cupola furnace and did not give a fair result. We shall use in our gun hematite ores, and prefer pure cold-blast charcoal iron.

Question. You take this pains to ascertain that the metal and all is good, and then you test by service charges?

Answer. Yes, sir. We have an officer at the foundry whose duty it is to watch every pound of metal that is put in the furnace, note the time the fire is started, and trace the whole thing up to its completion, so that we know the life and biography of a gun as well as we know the history of anything else on earth.

Question. Do you believe that those tests are satisfactory?

Answer. They are not *absolutely* satisfactory in all respects.

Question. Could they be improved so as to be made more satisfactory? If so, how?

Answer. I do not know that they could; but we would like very much to discover some more satisfactory method. There is very little known of iron in its fluid state. We know as little of that now as was known 3,000 years ago, and it has to be almost by instinct that we judge when the metal is in a proper condition to be run from the furnace for a great casting; and the mechanical tests to which we subject iron are in some respects fallacious.

Question. Did you state what proportion of guns used by the navy are rifled guns?

Answer. At present about one-fifth rifled to the smooth-bores.

Question. Are you increasing the proportion of rifled guns? and if so, how rapidly?

Answer. I am not.

Question. You prefer about that proportion?

Answer. About that proportion.

Question. Has there been any delay in the construction of those rifled guns?

Answer. Never a moment, night or day, from the hour the rebellion broke out.

Question. When were those rifled guns introduced into the navy?

Answer. I think we got the first rifled gun, of small calibre, from Mr. Parrott, in May or June, 1861, after the rebellion broke out, and from that day to this we have never ceased getting them.

Question. Do you use the same strength of powder, according to the weight of projectile, in a rifled gun as in a smooth-bore?

Answer. No, sir; the proportion is different.

Question. What is the difference of proportion?

Answer. We use more powder in the smooth-bore gun than in the rifled gun, in proportion to the weight of the projectile—about two-thirds more in the smooth bore. It may vary from that; different guns take different charges.

Question. Which of those guns will have the longest range, and which be the most effective?

Answer. The rifled gun has the greater range, but the ball from the smooth-bore *starts* with the greater velocity. In other words, the rifled projectile retains its flight longer than the smooth-bore ball. The effect which projectiles produce is different under varying circumstances. The rifled gun, with its projectile, can cut away masonry or brick-work. The round shot has a smashing power, and at a certain range, with its high velocity, it can penetrate as well as *smash*.

Question. Does not the spiral motion tend to make the rifled projectile penetrate furthest?

Answer. We do not find that to be the effect upon iron plating. We find that we have quite as much penetration with our round balls as with the heaviest steel-headed rifled bolts.

Question. If the initial velocity of the smooth-bore is greater than that of the rifled projectile, why is it that the rifled will go the furthest?

Answer. That is rather a nice question. The rifled projectile meets with less resistance on account of its shape, and, therefore, will maintain itself longer in the air, like an arrow.

Question. And yet the smooth-bore has the greater velocity to start with?

Answer. Yes, sir.

Question. And the strength of the blow is in proportion to the velocity of the ball?

Answer. Yes, sir.

By Mr. Gooch:

Question. The shape of the rifled projectile is different from that of the smooth-bore?

Answer. Entirely different; the one is round, and the other is elongated.

Question. You spoke of the one continuing its flight in the air longer than the other, or keeping up its velocity longer; is that in consequence of the difference in shape?

Answer. Yes, sir.

Question. When was the rifled gun first introduced into use in this country?

Answer. It was not introduced into service until this war broke out. A great

variety of rifled guns have been presented and experimented with by us in the navy, and also in the army; but they never were put into service, with the exception of Dahlgren's boat howitzers, which have been rifled, and those pieces date about five years back.

Question. Was the rifled gun in use in other countries—in England and in France—before used here?

Answer. There were a few put on board as experiments, and Mr. Armstrong's breech-loading rifled guns were being largely introduced into the English service, but I believe they have all proved failures and been withdrawn.

By the chairman:

Question. What is the Whitworth gun?

Answer. It is a breech-loading piece; but instead of being rifled with grooves, its bore is hexagonal in shape, having flat surfaces, and the projectiles also have flat sides, to fit those flat fascets. It requires the most beautiful mechanical workmanship to adapt the Whitworth projectile to its bore.

Question. But there could be no such thing as "stripping," as it is termed, in such a gun?

Answer. No, sir; and the nice adaptation of the sides of the projectile to the flat fascets of the bore brings very little strain upon the gun, although the metals are the same; you bring iron and iron together.

Question. Do you regard that as a more powerful gun than our Rodman or Parrott gun?

Answer. We regard it as less powerful. We have in this country more powerful rifled cannon than any we know of abroad.

Question. Have you reason to suppose, from your tests, and all the other information you have been able to obtain upon the subject, that our guns are the best known in the civilized world?

Answer. We have every reason to believe so, because our experience in actual service and warfare shows conclusively what the guns have endured and can endure, and there are no evidences that we know of that the same tests have been applied to any other system of rifled cannon. Therefore, with these absolute results before us, we conclude that our guns are the best.

Question. Are you acquainted with the tests to which other nations subject their guns?

Answer. Yes, sir.

Question. Describe their method, if you please.

Answer. They are believed to be very similar to ours in the actual powder test. I do not know whether, at present, the English apply the water test or not; that is an additional proof.

Question. How do their tests and ours compare? Which show the most powerful guns?

Answer. Our guns have a greater endurance than any English gun.

Question. Do you pay more per pound for the Rodman and Parrott guns than you do for the Dahlgren gun?

Answer. We do.

Question. How much more?

Answer. Rifled guns are more expensive than smooth-bores. We pay Mr. Parrott about seventeen cents a pound for his guns. That is somewhat more than the price per pound of guns cast after Rodman's method.

Question. What is the price of the Rodman gun?

Answer. Each of his 15-inch guns cost \$6,500, and they weigh, on the average, 45,000 pounds.

Question. You say you think there is no "royalty" paid. What is the price, per pound, of the Dahlgren gun?

Answer. About ten cents.

Question. Why is there that difference between that gun and the Parrott gun, and the Rodman gun, if there is no "royalty" paid?

Answer. The Parrott gun is a rifled gun, and also bound round with wrought-iron, a material much more expensive than cast-iron, and requiring more labor upon it.

Question. The Rodman gun is a cast-iron gun, and not rifled?

Answer. Yes, sir; but the risk is very great in these large castings. It cost \$60,000 for the plant alone to make the first 15-inch gun for the navy, and it is against the law to pay any "royalty." We never did it in the navy. We buy a projectile, or other article, and are frequently served with notices not to use it. We do not pay the least attention to that, however, but get the article, pay for it and use it, and that matter is left entirely to the parties themselves. There is one thing very certain, that no gun of the class of 15-inch could possibly be made by any other method than the one invented by Major Rodman.

Question. None of our guns that you have described are breech-loading guns?

Answer. Not one of them.

Question. Have we any efficient breech-loading gun in our service?

Answer. Not one, and never had.

By Mr. Harding:

Question. Is there any efficient breech-loading gun anywhere?

Answer. Not in my opinion. The Armstrong gun, I understand, is being withdrawn.

By the chairman:

Question. Is there a gun called the Ames gun, or something of that kind?

Answer. Mr. Horatio Ames, of Falls River village, builds a wrought-iron gun, solidly welded, as he terms it. He made five or six guns under the order of the Bureau of Naval Ordnance. One of them, a 50-pounder, after being rifled, was put to proof and endured a number of rounds, sufficient to show that it had the strength required. And, although in the other guns some defects were observed in the bores of the guns, yet there was no doubt of their being strong guns. The difficulty, however, in wrought-iron guns is, that you may make one gun that will stand ten thousand rounds, and the next gun may not stand ten rounds. You cannot get the uniformity desirable.

Question. If a wrought-iron gun should be made perfect, would it not be much stronger than any cast-iron gun?

Answer. Very much stronger, for the difference in tensile strength is very great. Wrought-iron has a tensile strength of over 56,000; whereas, if we get a tensile strength in cast-iron of 30,000, we are doing very well.

Question. And the English are making these wrought-iron guns?

Answer. They are making a great number of experimental guns; but they do not seem to reach any results sufficient to authorize them to place those guns in actual service. Besides, the expense is enormous; it is the difference between ten cents a pound and a dollar a pound. And our cast-iron guns stand firing 1,500 rounds, and that is about as many rounds as a gun need be fired in an ordinary war.

Question. Could you not get increased efficiency by a greater charge of powder, if your gun would stand it?

Answer. I think we can put as much powder into our heavy ordnance as the gun will burn—of what is ordinarily called cannon powder.

Question. Is there any particular length of gun that is found to be better than any other, so that you adopt a particular length of tube?

Answer. Every designer of a gun adopts a certain proportion of calibres to the length of his bore, all different. No one has produced a gun yet which he can say positively is of the exact length that a gun should be. They differ in regard to the weight, calibre, and principle.

Question. The range of a gun will not be in proportion to the length of the tube ?

Answer. By no means.

By Mr. Harding :

Question. Does the length of the tube seem to have anything to do with the range ?

Answer. It does up to a certain point; that is to say, about five or six calibres in length of bore is considered by the best authorities who have studied this question to be sufficient to give range. We can only take the best that are produced at the time, both in regard to ordnance, projectiles, and everything else.

By the chairman :

Question. This 15-inch gun is strong enough to bear all the charge necessary to make it perfectly efficient ?

Answer. Yes, sir. But I have modified the first navy gun by giving it more length.

Question. Have you any assurance that in these 15 and 20-inch guns you can give the spiral motion to the ball ?

Answer. No, sir; we do not expect to rifle those guns. The guns that I spoke of as being rifled, and which are cast on Rodman's method, are 600-pounders. There are three of them, having the same external form and dimensions as the 15-inch gun, so that you may use a pair of those guns, and the same carriage will fit the one or the other.

Question. That enormous weight of ball is made up by its length ?

Answer. Yes, sir.

Question. What would be the weight of a round ball to fit that calibre ?

Answer. Some two hundred and twenty pounds, or thereabouts, I should think.

Question. Have you in your office a record of the tests to which you have subjected these guns ?

Answer. We have there the entire history of every gun that ever was made for the navy.

Question. Could you, without having it in too extended a compass, give us a summary of those tests ?

Answer. We can give it to you; we have it all printed.

Question. In an extended form, I suppose ?

Answer. Rather extended.

Question. We want it in as compact a form as we can get it.

Answer. I can give the test of one gun, which is the same as of every other gun.

Question. Can you, without too much trouble, give the tests of one of each kind of guns that you have ?

Answer. I can, and will do so.

By Mr. Gooch :

Question. Is there any objection to making your tests public ?

Answer. None.

Question. Have all the experiments with rifled guns in this country been made since this war commenced ?

Answer. No, sir; a great many experiments were made previously.

Question. But nothing was adopted ?

Answer. No, sir; except Dahlgren's rifled boat-howitzer.

Question. What guns are used now for harbor defences ?

Answer. That subject is in charge of the army.

Question. Have the guns for 24, 32, and 42-pound solid shot, and 8 inch shell, of our former armament, been discarded?

Answer. In the navy the 24 and 42-pounder cast-iron guns have been discarded. We still use the 32-pounder.

Question. Why have those guns been discarded?

Answer. In the one case the gun was very weak in proportion to its calibre; and ships have now become so strongly built that we want heavier shot and shell to break through them.

Question. Do you require an entirely different armament for your iron-clads from what you did for wooden ships?

Answer. To a certain degree we do.

Question. It should be heavier?

Answer. It should, I think, be heavier. We use 150-pounders on board wooden ships, but not the 15-inch guns.

Question. The light projectile is about worthless, is it not, as against iron-clads?

Answer. Yes, sir.

Question. Why is it that we are now able to make guns of so much larger calibre than formerly and have them serviceable?

Answer. The necessity for a larger calibre had never presented itself before.

Question. Had not these large guns been attempted before?

Answer. Yes, sir, very large guns have been made for the last two hundred years, but they all failed.

Question. And has not our improved knowledge in relation to metals and the manipulation of them caused the change?

Answer. That has had a great deal to do with it, no doubt.

Question. What is the largest gun now used in our navy?

Answer. The 15-inch gun, in our or any other navy.

Question. Do you think it would be desirable to use a larger gun?

Answer. That is a question yet to be solved. We are going to try the experiment, at all events; we are about to cast a 20-inch gun—to be cast on Rodman's method, of the navy form.

Question. Could not the Dahlgren gun be made upon the Rodman principle and be improved?

Answer. Admiral Dahlgren is not of that opinion.

Question. Is there not a controversy between scientific men on that point?

Answer. There has been.

Question. Would it not be an easy matter to test the question by making a Dahlgren gun on the Rodman principle?

Answer. It might be done. But a similar experimental test has been made with two army guns, all of which is reported in Major Rodman's book on the subject.

Question. Were the army guns of the shape of the Dahlgren gun?

Answer. They were not.

Question. Are we not now, in your opinion, making rapid progress and great improvements in the method of constructing guns?

Answer. I think we are.

Question. So that it is by no means certain that the best gun of to-day will be the best gun of next year?

Answer. By no means.

By Mr. Odell:

Question. Have not those improvements been the result of our experience since the beginning of this war?

Answer. They have, except in the Dahlgren gun. And that gun is as nearly a perfect smooth-bore gun as can be made.

By Mr. Gooch :

Question. Unless it can be improved by being constructed upon the Rodman principle ?

Answer. Unless it can be improved by casting it upon some better method.

Question. Has the navy kept up with all the improvements in guns ? Has it introduced the best guns it could get, and as fast as it could get them ?

Answer. It has, in my opinion.

By Mr. Odell :

Question. Can you furnish the committee with a statement of the number of guns made for the navy at each foundry, and the price paid ?

Answer. The prices paid are the same for the same kind of gun. It would take me some little time to get up the number of guns.

Question. And where there is any variation in price, will you state the reason for it ? Also, if there are now outstanding contracts, and with whom ? Also, at what places old guns have been rifled, and at what cost ?

Answer. Those for the navy have never been rifled, and never will be, as far as I am concerned.

Question. Also if "royalty" is paid ; and if so, how much and to whom, for any appurtenances used in connexion with heavy ordnance ?

Answer. We pay nothing as "royalty." I do not know what the man who contracts with us may pay the inventor.

By Mr. Gooch :

Question. Will you describe the difference between the blow, or the concussion, produced by a projectile from a smooth-bore gun and a projectile from a rifle gun ?

Answer. That would depend very much upon the velocity. The smooth-bore, at the same velocity as the rifled projectile, would exert a smashing effect, while the rifled projectile would penetrate.

Question. And which would be the most effective ?

Answer. That would depend upon the substance against which the projectiles were fired.

Question. Take it in the case of an iron-clad.

Answer. I should prefer the smashing effect of the round ball from the smooth-bore.

Testimony corrected and hereby respectfully returned.

H. A. WISE,

U. S. N., Chief of Bureau of Ordnance, ad interim.

NAVY DEPARTMENT,

February 8, 1864.

APPENDIX.

Number of navy guns made since the beginning of the rebellion, by whom made, and prices thereof.

IX-INCH GUNS.	
Where made :	No.
C. Alger & Co., Boston	100
West Point foundry, Cold Spring, New York	5
Seyfert, McMann & Co., Reading, Pennsylvania	100
Fort Pitt foundry, Pittsburg, Pennsylvania	300
Total	505

The price of IX-inch guns was 7½ cents per pound up to July, 1863; and the weight of each gun being about 9,200 pounds, makes the average cost \$690 per gun. In July the price of the same guns was raised to 9½ cents per pound.

XI-INCH GUNS.

Where made:	No.
C. Alger & Co., Boston	89
Builders' iron foundry, Providence, Rhode Island	50
West Point foundry, Cold Spring, New York	16
Hinkley, Williams & Co	50
Seyfert, McManus & Co	50
Fort Pitt foundry	58
Total	313

Price paid for above XI-inch guns, except last fifteen manufactured, was 8½ cents; and the average weight of XI-inch gun being 15,900 pounds, makes the cost per gun \$1,391 25. For the last fifteen 11½ cents per pound was paid.

NOTE.—The increase in the price of IX-inch and XI-inch guns was made in consequence of the increased price of labor and materials. The War Department first allowed this increased price, and this bureau was unable to make any new contracts with the founders without a similar increase, and in accordance with the instructions of the Navy Department this increase was consequently made.

XV-INCH GUNS.

Where made:	No.
Fort Pitt foundry	36

Price, \$6,500 per gun; weight of gun, 42,000 pounds.

PARROTT RIFLED GUNS MADE AT WEST POINT FOUNDRY.

Number.	Calibre.	Weight.	Price per gun.	Average price per pound.
215	20-pounder	1,750 pounds	\$380	\$0 21.7
250	30-pounder	3,500 pounds	600	14.3
250	100-pounder	9,800 pounds	1,200	12.2
75	150-pounder	16,500 pounds	1,900	11.½

Number of guns contracted for yet undelivered.

IX-INCH.

Where made:	No.
Fort Pitt foundry	300
Alger's foundry	25
Total	325

XI-INCH.

Where made:	No.
Portland, Maine	50
Fort Pitt foundry	192
Builders iron foundry	50
Hinkley, Williams & Co	50
Cyrus Alger & Co	25
Total	367

PARROTT RIFLED GUNS.

No contract has been made with Mr. Parrott for a *definite number* of his rifled guns, but the understanding is that he shall continue their manufacture, as rapidly as his works will permit, until notified that no more are required.

PROOF OF UNITED STATES NAVY GUNS.

The proof of cast-iron smooth-bore guns, manufactured for the navy, consists in firing one thousand times, with service charges, one of six guns cast preliminarily and precisely in the same manner from iron of certain kinds or grades, a sufficient quantity of which has been collected to make the whole number of guns of the contract.

Should this gun endure this test without bursting, or indicating weakness by an unusual wear of bore or vent, it is paid for and accepted as the *standard* gun of its class.

During the manufacture of these preliminary guns a record (see blank form attached) is kept of the whole process by an officer detailed for the purpose, and all the remaining guns of the contract *must* conform in every particular and detail to the standard gun as nearly as possible, especially in tensile strength, density, and the general characteristics of the metal under the tools.

The remaining guns of the contract, if they conform in the above particulars to the standard gun, are fired ten times with service charges from a pendulum or skids, and if upon a careful examination of the bore, &c., no defect is seen, are accepted and put into service.

In addition to the proof by firing, all guns are subjected to the water proof, which consists of forcing water into the bore by hydraulic pressure—force, two atmospheres.

The proof of the Parrott rifled guns is precisely the same as that for the smooth-bore, one of a medium calibre (100-pounder) having been submitted to a series of 1,000 service rounds before their adoption into the naval service.

The great tenacity of bronze guns which pass the usual mechanical tests of density, tenacity, and absence of porosity, together with a close and uniform admixture of their composite elements, affords the best evidence of their reliability.

They are, nevertheless, proved by ten service rounds before being put on board ship.

OF THE PROOF OF ENGLISH GUNS.

With reference to the tests of English guns, the bureau has no information now, but respectfully refers to the report of a commission, printed in Senate documents, 2d session 26th Congress, page 229, for the proof in 1840-'41.

No.	COMBINATION OF METAL, PER CENTUM.					Furnace.	Fuel.	Blast.	No.

Sketch always to be sent, showing the *exact* places from whence specimens are taken.

No.	MEAN DENSITY AND TENSILE STRENGTH OF THREE SPECIMENS.								No.
	AT FOUNDRY.				AT WASHINGTON.				
	Density.		Tensile strength.		Density.		Tensile strength.		
	Head.	Core.	Head.	Core.	Head.	Core.	Head.	Core.	

NOTE.—The proof gun is to be entered at head of each page.

No.	CHARGE OF FURNACE, IN POUNDS.						No.

No.	CHARGE OF FURNACE, IN POUNDS.			No.
			Total in pounds.	

No.	Date of casting.	TIME.				No.
		Required to obtain complete fusion.	Kept in fusion.	Of filling mould.	Remained in open pit.	

No.	EXCESS OF ROUGH OVER FINISHED DIMENSIONS.						GUN HEADS.			Time of boring.	Time of turning.	No.	
	K. Excess at muzzle-face.	H. J. Excess at chase.	G. Excess at 3d curve.	E. Excess at 2d curve.	C. Excess at 1st curve.	A. Excess at breech and cylinder.	LENGTH.		DIAMETER.				
							Inches.	Inches.	Inches.				

No.	METAL WORKED.		Cavities, &c.	No.
	At foundry.	At Washington.		

No.	APPEARANCE AT FOUNDRY OF—				No.
	Fracture of core.	Core.	Bore.	Exterior surface.	

No.	WEIGHT OF GUN.	PREPON- DERANCE.	DISTANCE FROM BASE- RING TO CENTRE OF TRUNNIONS.	MAXIMUM INDENTA- TION BY POWDER PROOF IN 1000THS OF AN INCH.	DIAMETER OF BORE BY STAR GAUGE, AFTER PROOF.		No.
	Pounds.	Pounds.	Inches.		Greatest.	Least.	

No.				NAME OF INSPECTOR.	ARE THE INSPECTOR'S MEAS- UREMENTS WITHIN REGU- LATION LIMITS?	No.

No.		REGISTER NO.	REMARKS.	No.

Testimony of Captain S. V. Benét.

WASHINGTON, January 28, 1864.

Captain S. V. BENÉT sworn and examined.

By the chairman :

Question. What is your rank and position in the service?

Answer. I am captain of ordnance. For the last two years I have been instructor of ordnance and gunnery at the Military Academy at West Point; and although I have been relieved by late order, I have not yet entered upon my new duties. I have also, for the last two or three years, been engaged a great deal at the West Point foundry, under Captain Parrott, in testing and experimenting with the Parrott gun.

Question. We are directed by the Senate to inquire into the condition of our heavy ordnance. I will read the resolution to you, so that you may understand the purport and extent of our inquiry.

(The resolution of the Senate, of January 25, was then read to the witness.)

What, in your opinion, is the efficiency of the heavy ordnance such as we use on our fortifications and in our navy?

Answer. I think they are thoroughly efficient guns—that is, as compared with other heavy ordnance of other services.

Question. Is there a gun called the Rodman gun, that you know about?

Answer. I do not know whether it is officially called so; but it is commonly known by that name. That is a gun cast with a hollow core, an invention of Captain (now Major) Rodman. The object of that invention is to cool the gun from the interior when cast, so that the strains may be exactly the reverse of those produced when a gun is cast solid and then bored out. In the casting of a gun that is cast solid, the outside first becomes rigid and the metal there is compressed, while that of the interior is extended, so that it is actually in the proper condition to be burst by the action of gunpowder from the interior. The object of Major Rodman's plan is to reverse this action and have the metal compressed on the interior. In doing that the metal is necessarily somewhat expanded on the exterior, but you have the gun in a better condition to resist the action of gunpowder, the strains contributing to its strength. The tests to which those guns have been subjected show that their endurance is greater than that of solid castings, and within the last year or two all our heavy smooth-bore ordnance has been cast upon the hollow principle. I think it is the universal opinion in my department that the improvement of Major Rodman has been decidedly a great one; and we are also of the opinion that no guns of very heavy calibre can be cast except upon that principle. I know, from my duties at the West Point foundry, where the heavy Parrott rifled gun has been cast, that Captain Parrott himself—whom I consider one of the ablest and most experienced founders and artillerymen—admits the excellence of the invention. During the past two years he has been of that opinion, and has been endeavoring to make preparations for the purpose of casting his heavy guns upon the hollow principle. I have always favored it myself, and while experimenting with his guns frequently urged it upon him, believing it would have a tendency to strengthen them. The country is indebted to Major Rodman for other most valuable improvements, and he deservedly stands first among the distinguished scientific artillerymen of the age.

Question. Is there any difference between the Rodman gun, so called, and the Dahlgren gun, except in the method of manufacture?

Answer. There is a slight difference between them in what we would call the model; that is, the exterior surfaces are a little different. The Dahlgren gun, I think, is thinner in the chase than the Rodman gun. But the outline of both guns is pretty much the same—that is, a smooth curved surface, without any exterior mouldings or sharp angles.

Question. In your opinion would it add strength and endurance to the Dahlgren gun to cast it upon this new principle?

Answer. It would be an advantage for all guns, and especially of large calibre. It would be very difficult to cast a very small gun with that hollow core, and in casting solid a small piece of ordnance, like a field gun, you can make a better casting, and the iron is more homogeneous, more solid, than in casting a large gun. There are therefore not the difficulties to be encountered in casting a small gun as in casting a very large one. And this principle of Major Rodman is not so absolutely necessary in a small piece of ordnance. Captain Parrott has now perfected his arrangements, and is casting all his heavy guns on the Rodman principle. He informed me a few weeks ago that he had cast very successfully one or two 300-pounders on that plan, and, I think, one 200-pounder also.

Question. What is the calibre of the guns the navy is being supplied with now?

Answer. I know the navy is using the 15-inch Dahlgren gun cast upon the hollow principle; and they also use the 9 and 11-inch guns; but I do not know whether they are cast hollow or solid. I am not so familiar with the ordnance of the navy.

Question. Have you the means of forming an opinion as to those 15-inch guns—whether they are sufficiently strong to endure the charge of powder in proportion to the weight of the ball used in guns of smaller calibre?

Answer. I have had no experience with the 15-inch gun; but I should think, from what I have learned of experiments at the navy yard here, that they could bear a very heavy charge of powder—I think nearly the usual proportion used in smooth-bore guns, which is from one-fourth to one-fifth the weight of the shot. I think that I heard the other day that they were using as high as 70 pounds of powder to a shell of about 300 pounds weight, which is about the ordinary charge of powder in proportion to the ball for smooth-bore guns.

Question. Have you any means of knowing the proportion of rifled to smooth-bore guns with which the navy is armed?

Answer. I have not. I know that a very large number of guns have been issued to the navy from the West Point foundry, where they make 8 and 10-inch guns, and 100 pounders.

Question. These Rodman guns are smooth-bores?

Answer. They are all smooth-bores; there have been one or two rifled for experimental purposes—I think a 12-inch and probably an 8-inch; that is, a 15-inch gun was made with a bore of 12 inches, and then rifled and tested. I do not know to what extent that test has gone.

Question. Will you describe the Parrott gun?

Answer. It is nothing but a cast-iron gun with a wrought-iron hoop around the seat of the charge: the gun is usually made with a thickness of metal of about one calibre; then around that is put a jacket of wrought-iron of about one-half a calibre in thickness; that jacket or hoop is made by taking a long bar of square iron of the proper thickness. In the heavy guns this bar is heated; in the smaller guns it is used cold, and by means of machinery coiling it around a mandril; that coil is then put into a furnace and brought to a welding heat; then put into a cylinder and brought under heavy trip or steam hammers, and welded together. It is then put into a lathe and turned upon the exterior and interior; it is afterwards heated and slipped upon the breech of the gun and allowed to shrink upon it.

Question. Those guns are rifled?

Answer. All the Parrott guns are rifled. Those are the guns that were used on Morris island for the reduction of Fort Sumter.

Question. Which gun do you consider the most powerful gun in use now?

Answer. Of smooth-bores, of course our 15-inch gun is the strongest gun; the largest guns are necessarily smooth-bores. As to the rifled guns I think those made on Parrott's system are the best used in the service; in forming that opinion, a great many things are taken into consideration—for instance the price of the gun, which is a very important matter. We also consider the size of the gun, and the work it is able to perform. The price of the Parrott gun is comparatively very small—for instance, the 100-pounder, which weighs 9,700 pounds, costs only \$1,200. An Armstrong gun of the same size would probably cost as many pounds.

Question. Why is there that difference?

Answer. The Armstrong gun is made of wrought-iron. It is what we call a "built up" gun, and requires great care and expense in its manufacture.

Question. Is the Armstrong gun a breech-loading gun?

Answer. I believe Armstrong makes his guns breech-loading up to the 110-pounders; but beyond that he cannot make them breech-loading. For instance, the 600-pounders, of which you have seen accounts in the papers lately, are muzzle-loaders.

Question. Do you know what is the calibre of that 600-pounder?

Answer. I do not. I should suppose it was about 13 inches.

Question. It uses a bolt instead of a round shot?

Answer. In rifled guns we always use elongated projectiles, as they are called ; that is, they are usually from $2\frac{1}{2}$ to 3 calibres in length.

Question. What do you know about the policy now adopted by the government in regard to substituting rifled guns for the smooth-bores ? Do they endeavor to get as many rifled guns as they can ?

Answer. As far as I know they do. At the Parrott foundry I was once on duty, inspecting and proving guns, until I was relieved by an officer especially detailed for the purpose. Since then I have been over at the foundry every day for months at a time, carrying on experiments under orders from the department. I know that at the first battle of Bull Run we had some of the Parrott guns. There were some few smooth-bore guns and some mortars made about that period, merely to complete some order previously given. But from that time to this, to my knowledge, Captain Parrott has made nothing in the world but rifled guns of all sizes. At first he made those of small calibre, 10 and 20-pounders ; then in the fall of 1861 he brought out his 100-pounder ; after that his 200-pounder, 8-inch ; and then his 10-inch 300-pounder. He has used the full capacity of his foundry entirely for rifled guns and projectiles, and, as far as I have been informed, all the orders from the ordnance department have been of the most liberal character. As soon as Captain Parrott reported that he had his 100-pounder, or 200-pounder, or 300-pounder, ready for trial, there was an officer ordered to try it, and the gun was immediately taken into the service, and others ordered.

Question. What is the difference in the charges of powder in a smooth-bore and in a rifled cannon, to propel balls of the same weight ?

Answer. In smooth-bores we use powder $\frac{1}{4}$ or $\frac{1}{3}$ of the weight of the shot ; sometimes for breaching purposes, or with small guns, we run it up to $\frac{1}{2}$ or $\frac{2}{3}$ the weight of the shot. For rifled guns, the rule generally fixed upon in the service—at least, in our service—is to use $\frac{1}{16}$ the weight of the projectile.

Question. Will the rifled ball be most effective at long range with that diminished charge of powder ?

Answer. Altogether so. I have myself, in experimenting with the Parrott 100-pounder, with ten pounds of powder and 35° elevation, fired a shot weighing from 80 to 100 pounds over five miles.

Question. How far could you carry a smooth-bore of the same weight ?

Answer. I presume a smooth-bore would hardly go over $3\frac{1}{2}$ miles.

Question. Is the initial velocity of the smooth-bore and the rifled projectile the same ?

Answer. No, sir ; the round shot always has a much greater initial velocity than the rifled shot. We use a much smaller charge of powder for the rifled gun, and there is a great deal of friction in taking the grooves ; but it keeps up its flight longer. In firing the two shots together, the round ball would be ahead at first, but after a while the rifled shot would catch up, and then pass it.

Question. At close range, then, the smooth-bore might be as effective as the rifled gun ?

Answer. For certain purposes it would be more effective ; and as to the matter of accuracy, take the distance of 1,000 yards, and I presume a good smooth-bore gun would fire as accurately as a rifled gun ; but then for that distance it has its greater velocity. I should think that for use against iron-clads, at that distance, its smashing effect would render it more effective than a rifled gun ; but when you come to greater distances, you want accuracy as well as effect, and you must use rifled guns to obtain that.

Question. That would lead us to conclude that there must be a mixture of smooth-bore and rifled guns ?

Answer. I think so ; especially the 15-inch guns, throwing a projectile of great weight with very great velocity, would have a terrible effect at short

range; but at great distances you want accuracy in order to attain your object.

Question. Can you prevent so heavy a projectile from stripping, running across the grooves, in rifled cannon?

Answer. That depends upon the projectiles you use. In trying new inventions we find that some projectiles will have that effect, and we reject them. It depends upon the metal and the grooves. With the projectiles Parrott uses in his guns there has never been any difficulty of that kind.

Question. Have the English or French, so far as you know, any gun in their service more efficient than our Parrott gun?

Answer. I do not think they have. In the first place, I do not think they have a gun that they can send into service that is larger than our 100-pounder. Those heavy guns of Armstrong, that we hear of, are merely experimental guns, while we are sending our 200-pounders into the service almost everywhere; and even the few 300-pounders which have been made have been introduced into and used in the field as siege guns.

Question. We are instructed to inquire as to the amount of "royalty" paid on those guns. Do you know the cost of the Rodman gun per pound?

Answer. I cannot tell about the "royalty." I know we were paying some $6\frac{1}{2}$ cents per pound for ordinary guns, and that for the Rodman gun we paid $7\frac{8}{10}$ cents per pound. I should suppose the "royalty" was the difference between $6\frac{1}{2}$ and $7\frac{8}{10}$.

Question. Say about one cent per pound?

Answer. It was meant to be 20 per cent. That information I got from the report of the commission to examine into contracts. That is all I know about it.

Question. Which is the cheapest gun, the Parrott or the Rodman?

Answer. I think the Parrott gun costs more per pound.

Question. Is that in consequence of its being rifled, and of this wrought-iron band around it?

Answer. Yes, sir.

Question. When was this Rodman gun invented?

Answer. He has been carrying on experiments for a great many years back—probably for the last ten years; but I think it was not much more than two years ago that his principle was ordered to be introduced into the service, and all those guns made on it.

Question. Was this principle known in Europe before he adopted it?

Answer. Not that I am aware of, although the principle was tried in Europe. I know there were two sets of mortars cast in Europe—two mortars were cast solid and two were cast hollow; those cast solid stood only some 700 or 800 rounds each, while those cast hollow stood over 2,000 rounds. And I think that has been the experience in this country. Our heavy sea-coast mortars—some of them on the Mississippi—have stood several thousand rounds each, and are good yet.

Question. What are the tests you apply to these heavy guns before they are adopted in the service?

Answer. The rule is this: of course, at first, when Parrott made his rifled guns, they took them, as they did whatever they could get in the hurry of the war. But as soon as time and opportunity offered, I was ordered to test his 10-pounders. The order was to fire it with service charges 1,000 rounds. The gun stood that, and could have stood several hundred—probably a thousand—more. When he introduced his 100-pounders, as soon as arrangements could be made, I was ordered to test them, in connexion with the navy. The order was to fire it a thousand rounds with service charges, to use 10 pounds of powder to 100 pounds of metal. I averaged that in the firing; the gun stood it, and I think would have stood several hundred rounds more. That decided that good guns could be made upon that system; therefore all the inquiry now, is whether

the other guns of that calibre are made in the same way. The guns are all inspected and proved when made; we are expected to get the size of the gun, ascertain that it is of proper shape, and everything else in reference to its dimensions. Then each gun is fired 10 rounds with service charges; that is apt to develop any incipient crack in the gun, or anything else that may be wrong. The gun is then re-examined very carefully, and the bore measured very accurately; and if it comes up to that test the gun is received. After the smooth-bore is inspected we fire only three rounds, which is supposed to be sufficient to develop any defects. With the rifled gun ten rounds is necessary, because you must test the grooves also. Every gun, smooth-bore or rifled, that is admitted into the service, must go through that test and inspection. For instance, having decided upon the Rodman principle, a founder, who wants to make guns for the government, says he will make them of a certain size, and out of such and such metal. The department orders one of his guns, and it is tested with 1,000 rounds. If the test is borne, specimens of the metal are taken and tested, and he is ordered to make all the rest of his guns exactly as he made that, and an officer is ordered to his foundry to inspect and prove his guns as they are made.

Question. Those tests are deemed satisfactory?

Answer. Perfectly so; I consider those tests perfectly satisfactory. The idea, as I understand it, is this: if you fire a gun a thousand rounds, and it stands the test, it will take a great many years in service, probably, before a gun of that kind is fired that many times.

Question. Has this 15-inch Rodman gun been sufficiently tested to prove that it is strong enough?

Answer. I should think so, although I have not experimented with the gun at all. But from what I have heard, and from the reports I have seen about it, I should think it was perfectly safe. Sometimes, in getting a number of guns into the service of a proper kind, you may come across a few that will yield sooner than expected, but that cannot be avoided, for even the best founders will sometimes get iron of unequal strength.

Question. There is a gun called the Ames gun, is there not? Do you know anything about it?

Answer. I believe it is a wrought-iron gun. I know nothing about it further than I remember having a conversation with Mr. Ames upon that subject many months ago. I think there is a gun of his patent at the navy yard here. I know nothing about it further than that; and I have understood that it has not been tried, and that it cost one dollar per pound.

Question. It seems to be assumed, by the resolution directing this inquiry, that there has been some delay in manufacturing these large rifled guns. Do you know how that is?

Answer. I do not think there has been the slightest delay. I refer principally to the Parrott foundry. I think the foundry has been kept employed to its utmost capacity. Indeed, it has been enlarged so that it works, probably, three times as many men as it did at the beginning of the war.

Question. How fast can they turn out these guns at that foundry?

Answer. That depends a great deal, of course, upon the size of the guns. Captain Parrott will turn out this year, if required to do so, over 2,000 guns of all sizes. Of that number he would probably turn out 600 of his heavy guns. At least, he could do that if the government happened to require them in that proportion.

Question. Is that foundry the only place where these Parrott guns are manufactured?

Answer. Yes, sir.

Question. Are you acquainted with the tests to which the English and French have subjected their guns?

Answer. No, sir; I am not.

Question. I think I understood you to say that, from all you know about guns in Europe, they have none better than our 100-pounder Parrott and our Rodman?

Answer. I do not think they have any in service larger than our 100-pounder Parrott. I do not know how it is in the French service, but I am under the impression that they are using their old guns, running up to 42-pounders. In our service we are rifling all our old guns, and they will make very efficient guns. I experimented with them myself, to see whether we could take all our old smooth-bore guns and make rifled guns of them; that is, the 24, 32, and 42-pounders. I found that it was perfectly safe to take our 24 and 32-pounders and rifle them and use them, without banding, up to 500 rounds; but that the 42-pounder was not safe unless it was banded. The War Department has, therefore, ordered that all the guns shall be rifled, and the 42-pounders to be banded at once; the others may be banded hereafter.

Question. That is not done in the navy, as we have understood?

Answer. I do not know what they have done.

Question. What is the expense of rifling the old smooth-bore guns?

Answer. It would not be over \$25 each, I presume; not much over that.

By Mr. Gooch:

Question. What is the expense of banding a 42-pounder?

Answer. I do not remember; I remember the cost of the rifling.

Question. Would it be a heavy expense?

Answer. It would be a heavy expense to rifle and band one of those guns, because the outside of the gun is of peculiar shape, and it is necessary to turn it off to a cylindrical form to receive the band.

Question. Is it an object to rifle and band an old gun, rather than get a new rifled gun of the same calibre?

Answer. I think it is an object to rifle it. But when you come to the expense of rifling and banding, the expense is so great that, if we are able to get new guns, I doubt whether there is much economy in changing the old guns into rifled guns.

Question. In the Parrott gun that you tested with 1,000 rounds, were there any damages perceptible?

Answer. In the 100-pounder, for instance, the grooves were not worn perceptibly, although fired a thousand times—nothing to affect the efficiency of the gun at all, in that respect. The vent is a point which we always examine very carefully; and it was examined after every twenty-five rounds throughout the firing. The vent showed signs of yielding at the three-hundredth round; that is, there were two or three little incipient cracks radiating from the vent. Impressions were taken at every twenty-fifth round until we got the thousand rounds fired. Those cracks enlarged, and at the thousandth round there were three of them; the longest crack being about an inch and a half long. But from the manner in which they enlarged, we were led to the conclusion that they were surface cracks, and did not extend into the interior of the metal. We thought the gun would stand several hundred rounds more; and during all the firing I felt so confident that I did not get under cover at all, but stood within thirty or forty feet of the gun. Some of these guns on Morris island have stood as high as 1,400 rounds.

Question. Would it be possible, by any process, to determine whether those were surface cracks or not?

Answer. There is no way except by cutting the gun in two there and examining it. Of course, the vent is always the weakest point in a gun, because you have made a hole in the metal there, and if the gun will yield at all it will be apt to burst through it; though old guns have burst without showing any fault at the vent.

By the chairman :

Question. And for that reason, is not a breech-loading gun weaker than a muzzle-loading gun ?

Answer. I should think so.

By Mr. Gooch :

Question. With a breech-loading gun, could you not determine if there was any deficiency existing in the gun, better than with a muzzle-loading gun ?

Answer. Yes, sir ; I think so.

Question. So far as you know, the affairs of the ordnance bureau have been conducted with energy and integrity in the procuring guns for the service ?

Answer. As far as I know, decidedly so.

By the chairman :

Question. What is the difference between the columbiad and the Dahlgren gun ?

Answer. There is no difference at all, further than in the exterior lines and the kind of chamber or bottom of bore. Captain Dahlgren, I think, gave that particular shape to his gun before the model of our columbiads was changed to its present form. At present the exterior models of the two guns appear to be very much alike. There is some difference ; the Dahlgren gun is a little thinner about the chase for the quantity of metal at the breech. The model of the columbiads and Rodman-guns was based on original experiments and researches made by Colonel Bomford and Major Rodman.

Question. Is there much difference between them in efficiency ?

Answer. I should think there would be none at all. Take one of each kind, of the same calibre and weight of metal, I should think there would be no difference at all, provided they are both cast hollow.

By Mr. Odell :

Question. From the result of your observations in experiment and practice, have many accidents resulted from the use of our ordnance ?

Answer. I should say very few, indeed. So far as I am aware, I should judge that very few accidents have happened in the field from explosions.

By Mr. Gooch :

Question. Where large charges of powder are used in the large guns, is the large-grain powder considered preferable ?

Answer. The larger you make the grain the more progressive will be the burning and explosion.

Question. What is the large powder ?

Answer. It is called the mammoth powder, with grains say an inch in diameter.

Question. How large a charge of powder have you ever fired in a 100-pounder rifled gun ?

Answer. I have [fired fourteen pounds of powder with say eighty pounds shot.

Testimony of General William F. Barry.

WASHINGTON, January 29, 1864.

General WILLIAM F. BARRY sworn and examined.

By Mr. Gooch :

Question. What is your rank and position in the service ?

Answer. I am a lieutenant colonel of the regular artillery of the army of the

United States, and brigadier general of volunteers. I am at present acting as chief of artillery of the army of the United States.

Question. We are instructed by the Senate to make inquiries in relation to the heavy ordnance now in use in the service. [The resolution of the Senate, of January 25, was read to the witness.]

The first point to which we shall call your attention is, the character and efficiency of the heavy ordnance now provided for the armament of fortifications.

Answer. Just at this time the ordnance in our fortifications is undergoing great change, in consequence of a recommendation of a board of officers assembled in the winter of 1861 and 1862, under the orders of General McClellan. General Totten was president of the board; General Barnard was one of its members, and I was another member. We considered the whole subject of the armament of our entire sea-coast. The board came to the opinion that the guns with which the forts were armed at that time were not powerful enough for the new class of vessels by which they would be likely to be attacked. In fact, at that time we had scarcely a gun that would be able to resist even the most slightly armored vessel. That board recommended, among other things, that there should be no gun bearing upon any important channel-way of smaller calibre than the 8-inch columbiad, and that gun was retained only because it was the largest gun in which we could conveniently use hot shot; but for that, we should not have retained it. Then the larger guns, 13 and 15-inch guns—and the 20-inch gun, if we ever have guns of that size—they are smooth-bore guns. At that time we had not a single rifled gun, that I am aware of, in any port, except the experimental gun that was down at Fort Monroe. There was no rifled gun that had been practically tested and decided to be an efficient and reliable gun. And I think there was but that one experimental gun in existence at that time. However, I am not entirely certain about that.

By the chairman :

Question. In this country, or in Europe?

Answer. I refer to this country entirely.

By Mr. Gooch :

Question. You have now described the condition of the armament of the fortifications at that time, and the decision of that board. Will you go on and state to us the character and efficiency of the guns that have been since introduced?

Answer. I believe the recommendations of that board have been entirely approved by the War Department—first by General McClellan, and afterwards by the War Department; and, so far as I am aware, those recommendations have been carried out as rapidly as the guns could be manufactured. The precise number of guns that have been introduced into the forts, I am unable to tell. We are substituting the 10-inch and the 15-inch gun. And latterly, they are commencing to rifle the old 32's and 42's and banding them after the method of Parrott. But the board that I allude to made no recommendation of that sort; that has been an after-thought.

Question. Do you know the proportion of rifled and smooth-bore guns now in our fortifications?

Answer. I do not. I do not think any proportion has been fixed, or can be fixed. One fort might have all rifled guns, and another all smooth-bore guns. It depends upon the situation of the forts, and the character of the object by which it would be attacked. I do not think any proportion has been fixed. I am unable to say how many rifled and how many smooth-bore guns have been actually issued. The ordnance department could tell that.

Question. Will you describe to us the different guns which have been approved and used in this country and in Europe as heavy ordnance?

Answer. To take the class of smooth-bore guns first, we have in this country

the 8-inch, 10-inch, and 15-inch guns. Those guns are now officially designated *Rodman* guns. I understand that that designation was intended as a compliment to Major Rodman in appreciation of the value of his invention. The 10 and 15-inch guns are cast on his method; that is, cast hollow and cooled from the inside. My opinion is that a reliable 15-inch cast-iron gun cannot be made in any other way. There is too great a mass of iron in one of those guns to admit of a perfect gun being cast by any other method than that of Major Rodman. The ordnance department are making arrangements now to cast a 20-inch gun after the Rodman plan; but a gun of that calibre has not yet been cast. I should include among the guns not yet removed the 24's, 32's and 42's, old smooth-bores. I understand that nearly all of these are to be removed; but the government has not yet been able to replace them. I understand that they are being replaced just as rapidly as the new guns can be made, and I understand that most of these old guns, when replaced by others, are to be rifled and banded; and the attempt is to be made to make serviceable rifled guns of them. Whether they will succeed or not remains to be seen.

Question. Can you state the expense of rifling and banding a 42-pounder?

Answer. I could not tell the exact expense. Some officer in the bureau of the ordnance department could give the exact figures upon that point.

Question. Have you any opinion as to the efficiency of these guns after they have been rifled and banded?

Answer. I have an opinion, but that opinion may be changed. I do not at present think that these guns will become serviceable guns; but that opinion is liable to be changed entirely by the practice we may have with them. As far as range and accuracy are concerned I believe that they will give very excellent results. The objection I have is in regard to the endurance of the guns; I do not think that even the wrought-iron band will make them safe rifle guns.

Question. That can only be determined by experiment?

Answer. In no other way.

Question. Will you describe to us the rifled guns now in use?

Answer. They are almost exclusively the guns that are popularly called 100, 200, and 300-pounder Parrotts, but as they do not now throw projectiles of that weight, those designations are therefore just now misnomers. Mr. Parrott made his projectiles of that weight at first; but it is ascertained that a projectile of less weight gives better results. The 100-pounder, so-called, now takes a projectile of 82 pounds; the 200-pounder, one of 150 pounds; and the 300-pounder, one of 250 pounds. These guns are now designated by the dimensions of the diameter of the bore as measured in inches. They are more properly 6 $\frac{1}{16}$, 8, and 10-inch rifle guns. The 100-pounder gun is of the same diameter of bore as the old smooth-bore 32-pounder. And a 32-pounder spherical projectile can be used in a 100-pounder Parrott with very fair results; it does as well out of the 100-pounder Parrott as it does out of the 32-pounder.

Question. Is there any rifled gun in this country that can compete successfully with the Parrott gun?

Answer. At the present time I know of none; I consider it the best rifled gun of large calibre that we now have.

Question. How does that gun compare with the best rifled gun in Europe, and what are the best rifled guns in use in Europe?

Answer. As far as my knowledge extends, I think England is just now the only foreign nation that has entered very extensively into the manufacture of these heavy guns for sea-coast defence or naval uses. The best rifled gun which the English now have is the Armstrong 110-pounder. They are now experimenting with a 300-pounder, and even a 600-pounder, of Armstrong. But in getting up to that size Armstrong has been obliged to abandon one of his grand principles, which was that of breech-loading. I think the practice abroad has

shown that it is impossible to make a safe gun of large calibre which loads at the breech. This 110-pounder is a breech-loading gun; but there are very great objections to it, and I rather think the 110-pounders they are now making are muzzle-loaders.

Question. State the objections to breech-loading guns.

Answer. The movable part of the breech is objectionable; it lacks strength, and its mechanism is faulty. No correction of these objections that is entirely satisfactory has yet been devised. These objections increase with the calibre of the gun. When the gun is of large calibre these movable parts are too weighty to be handled conveniently. Then the shock of the discharge is so great that in a short time it injures to a greater or less degree the movable parts of the breech. These difficulties of construction seem to me to be inherent, and they are the more to be regretted, because the larger the gun the greater the necessity there is to have it load at the breech. There is scarcely any advantage in having a field-gun load at the breech; indeed, as far as rapidity of firing is concerned, it is a disadvantage. You can fire a field-gun more rapidly loading at the muzzle; but in fortifications time is saved by loading at the breech, and your men are not exposed so much; so also in ships. But a large charge of powder increases the chances of injury to this part in the large gun.

Question. How large a gun of the Armstrong pattern has been made breech-loading?

Answer. The 110-pounder, I think, is the largest.

Question. And the 600-pounder is the largest Armstrong gun experimented upon?

Answer. Yes, at the present time.

Question. Do you know the condition of that gun?

Answer. I only know from conversation with English officers whom I have met here within the last six weeks. They tell me that their impression is that that gun is now unserviceable; that some flaw has been discovered in it. The published accounts, however, make no mention of that. The official accounts published in the London Times speak of the gun as a great success. But I am told differently by officers who come here to see our artillery, and who, perhaps, are a little more frank for the purpose of getting information from us.

Question. Can you give us any information in relation to the results of experiments of intermediate guns between the 110 and 600-pounder Armstrong?

Answer. No, sir, further than I believe there has been a 300-pounder experimented with. Whether that is a breech-loader or a muzzle-loader I am not certain; but I think it is a muzzle-loader. So many objections have been urged to the 110-pounder breech-loading gun, that I believe they stopped at that.

By the chairman :

Question. Is not there an inherent weakness in a breech-loading gun over a muzzle-loading gun, from the fact that the metal is cut in two?

Answer. Yes, sir.

Question. It cannot be made as strong as a muzzle-loading gun of the same calibre?

Answer. I should think not. Then there is a difficulty inherent to all breech-loaders, whether small-arms or cannon, in the lateral escape of the gases, on account of the joint not being made perfect. And that difficulty increases with the size of the gun. If you make the joint very perfect when the gun is cool, when it becomes heated by repeated discharges the parts expand so that they cannot be worked with ease, and sometimes not at all.

Question. And the result is that you cannot work a breech-loading gun as rapidly as you can a muzzle-loading gun—that is, you are not sure of doing so?

Answer. That is the result. I ought to add that I have never seen one of

these Armstrong guns. My knowledge of them is acquired from reading, and from conversation with English officers. I have read the official accounts, and have conversed on the subject with all the English officers I have met, for the purpose of deriving all possible information from them.

By Mr. Gooch :

Question. Is there any obstacle in the way of our manufacturing the Armstrong gun for the purpose of testing it, with a view to introducing it into our service if found superior to the Parrott gun?

Answer. I should say none at all. But I should think that, in view of all the objections entertained against the Armstrong gun, it would be hardly worth while for us to do so. I think it would be better to let England continue to experiment with it at her own expense. It has been a favorite gun with her, and Armstrong is apparently a pet with her government, and if the objections to the gun are such as to run it out of use there, we should be satisfied that there are really radical objections to it. It is, therefore, better to let England continue to experiment upon it at her own expense.

Question. In your opinion there has not been enough of merit discovered in that gun to lead us to experiment with it?

Answer. That is my opinion.

Question. It is a wrought-iron gun?

Answer. Yes, sir; what is called a built-up gun.

Question. What gun in use in England ranks next to the Armstrong gun for heavy ordnance?

Answer. There are three or four—I think five guns altogether; the names of the different inventors I do not now recollect, beyond that of Mr. Whitworth. I think there has been a commission appointed in England to experiment with one gun of each of these inventors, but the experiment has not yet taken place.

Question. Will you describe the Whitworth gun?

Answer. The Whitworth gun is a wrought-iron gun, the cross-section of whose bore is hexagonal, with a turn to produce the rifle motion. The projectile is turned in a lathe and very carefully shaped to fit that peculiar form of the bore. Without knowing the figures exactly, I should say that the Whitworth gun was a very expensive gun. I have never seen one of them of large size. We have in this country a battery of six Whitworth *field* guns, which was purchased by loyal Americans abroad at the commencement of the war and sent over to this country as a present. They must have been sent over here before the first battle of Bull Run. I know that shortly after I was appointed by General McClellan his chief of artillery, I received a letter from a gentleman in New York, stating that these guns were on Staten Island lying neglected there, and he thought it was not proper treatment of those gentlemen abroad who had purchased them and sent them over here. I mentioned the matter to General McClellan and recommended that they be brought on here. They were brought on here, and I examined them. My opinion was that the mechanism was too delicate for field service. The directions that came with them required that the movable parts should be constantly oiled with the purest machinery oil. Now, in campaign such care is not always possible, and the dust or mud of our roads would be very likely to put them out of order; and I found that even with care in the arsenal here in three or four weeks the movable parts of one or two of them became quite unmanageable. In regard to accuracy and range, they were quite successful. When General Hooker was down below at Budd's ferry I sent a couple of the guns down there, and they made very good practice with them; they would hit an ordinary farm dwelling-house over three miles distant.

Besides the delicacy of the mechanism, which I suppose would render the

guns constantly liable to get out of repair in the field, from the rough treatment that guns necessarily get there, the diameter of the bore of those guns was rather small. I do not think it was an efficient gun for a hollow projectile. There were no projectiles but *solid shot* to use with them. It was a very long bolt, the cross-section of which was a hexagon to fit the bore of the gun. It is very carefully turned in a lathe to make true surfaces. I have never seen a large gun of that kind, but I have a projectile of one. Two of the large guns were captured on a blockade-runner, going into Charleston, I think, with a lot of projectiles. The projectile is similar in shape to the small one of the 10-pounder; but having so much greater capacity, they can be serviceably used as hollow projectiles. The battery of 10-pounder guns was never put into active service in the field here. I sent a couple of them over to the forts across the river, where our men were annoyed by reconnoitring parties of the enemy coming up in their neighborhood, and they were used very successfully against them.

Question. Do you know how large those guns have been made breech-loading?

Answer. Of the Whitworth gun, a 100-pounder, or thereabouts.

Question. The same objections which apply to the small guns as breech-loaders would apply to the larger ones?

Answer. Yes, sir, I think so.

Question. Take the Whitworth gun where it could be kept in fortifications and kept in perfect order—if it has the advantages you have spoken of, would it not be a good gun for a part of the armament of fortifications?

Answer. I can only answer that question in regard to the smaller guns. I should say that there were those radical objections to a breech-loading gun for any large gun—that the movable part of the breech would be constantly liable to derangement.

Question. Do you know how large a Whitworth gun has been tested?

Answer. I do not.

Question. Do you think of any other English gun?

Answer. Those are all I can designate by name. There are four or five other varieties, purely experimental guns.

Question. You think the Armstrong gun ranks first, and the Whitworth gun next?

Answer. I believe so. But I will add, that I have yet to learn that any foreign gun has any advantages over the Parrott gun of similar weight of projectile.

Question. Do you consider them the equal of the Parrott gun?

Answer. No, sir. I do not consider any breech-loading gun of large calibre equal to a muzzle-loading gun.

Question. Are all of these guns—the 110-pounder of Armstrong and the Whitworth gun—breech-loading?

Answer. I believe all of them are, although so many objections have been urged against them that I believe it has been determined to abandon the breech-loading principle in all Armstrong guns of greater calibre than the 40-pounder.

Question. What would you say of the Parrott gun as compared with the Armstrong and the Whitworth gun, all made muzzle-loading?

Answer. I would say that they have no advantages, that I am aware of, over the Parrott gun.

Question. Both are constructed of wrought-iron?

Answer. Yes, sir.

Question. What is the comparative expense?

Answer. The Parrott gun is much cheaper. I think, all other things being equal, the Parrott gun is the cheapest gun we have.

Question. The next point about which we are directed to inquire is, the tests to which these guns are subjected when received into the service, and the rea-

sons for believing those tests satisfactory—I refer to the guns which are now in use in our own service. Can you describe the tests applied to the smooth-bores and the rifles?

Answer. I cannot exactly, because they are constantly changing them.

Question. Do you know the tests applied to the Rodman gun?

Answer. No, sir; I cannot say what those tests at present are. The service charge of the Parrott 6.4, 8, and 10-inch guns has been reduced of late.

By the chairman:

Question. Have military men, acquainted with this ordnance, perfect confidence in the Rodman gun?

Answer. Yes, sir; and I think the impression is that it would be perfectly safe to use larger charges in the Rodman gun than we use now. That is an objection that is urged against these guns, that the charge of powder is so small. I think the gun will stand a larger charge of powder than is now permitted to be fired out of it. I believe that Major Rodman is extremely anxious to have experiments made with that view. He thinks that larger charges can be fired with safety.

By Mr. Gooch:

Question. Who determines the size of the charge used now?

Answer. Officers of the ordnance department, called the ordnance board, who meet when called together by the Chief of Ordnance or the Secretary of War. All those matters are referred to what is called the Ordnance board—a committee of officers who are exclusively ordnance officers.

Question. The next point of inquiry is, What proportion of our sea and land armament is of rifled ordnance?

Answer. I should answer that pretty much as I have already answered it.

Question. When were rifled guns first introduced into our service?

Answer. As early as 1851, or thereabouts, I witnessed some experiments at Fort Monroe with a rifled sea-coast gun. I think that was the earliest effort made in this country. Those experiments were not successful.

Question. What gun was that?

Answer. It was one of our sea-coast guns, old pattern, rifled. I think the first attempt was with a 32-pounder; it may have been a smooth-bore 24-pounder, which had been rifled. The matter then appeared to sleep for many years, and I heard nothing of rifled guns, except in a conversational sort of way, until the time of the commencement of this rebellion. Then the Parrott rifled guns were introduced; it being considered at that time that those were the best rifled guns known. The officers of the army had been impressed for several years previous with the necessity of having such a gun. But it was a matter of experiment all over the world as to what kind of rifled gun was the best. When this rebellion broke out we were forced to adopt rifled guns at once, and the Parrott gun was then introduced.

Question. Since that time has the rifled gun been introduced into the service as rapidly as it could be obtained?

Answer. Yes, sir. With regard to field-guns, since the first year of the war there has been no difficulty about procuring the number of rifled guns that were considered necessary. Opinions differ upon the proportion of rifled and smooth-bore guns to be used. Those opinions are based upon the different views of different officers, even under similar circumstances; and even the circumstances govern that proportion very much. It depends very much upon the character of the country you are operating in, and of the enemy you are operating against. If it is a level or cleared country, a larger proportion of rifled guns would be necessary. If it is a hilly country, or one that is wooded, the smooth-bore would do as well as the rifled gun under most circumstances, and even better under some circumstances.

Question. In your opinion, are there in the service as many rifled guns as are necessary in proportion to the smooth-bores?

Answer. I think there are more. My opinion all along has been, that in such a country as ours the proportion should be not more than one-third rifled and two-thirds smooth-bore.

Question. State the reasons for that opinion.

Answer. Principally because our country is generally heavily wooded, and it is impossible to get a field of battle, for an army of 80,000 or 100,000 men to operate upon, that is not broken up by patches of thick woods, where the rifled gun would not be as good as the smooth-bore gun.

Question. Are smooth-bore guns better at short range than rifled guns?

Answer. Yes, sir.

Question. Why?

Answer. Because, other things being equal, the diameter of the bore is greater in the smooth-bore gun than it is in the rifled gun, and in firing canister, which is the projectile used for short range, you can use with a smooth-bore a canister containing a much larger number of bullets or small balls than you can use with the rifled cannon.

By Mr. Loan :

Question. Do not rifled cannon discharge canister with equal facility with the smooth-bore, and with equal fatality?

Answer. They do with equal facility, but not with equal fatality, because they do not contain as many small balls, the capacity of the canister used being smaller.

Question. What is the proportionate difference between the diameter of the bore of a smooth-bore and that of a rifled cannon?

Answer. For instance, the diameter of a 10-pounder Parrott is $2\frac{3}{8}$ inches; the diameter of the regulation rifled 10-pounder is 3 inches, and the smooth-bore 12-pounder has a diameter of $4\frac{5}{16}$ inches.

Question. What is the difference in the weight of those guns, the $4\frac{5}{16}$ inches, the 3-inch, and the $2\frac{3}{8}$ inches?

Answer. The Parrott 10-pounder weighs 900 pounds; the 3-inch regulation gun weighs about 830 or 840 pounds, and the 12-pounder gun weighs, in round numbers, 1,200 pounds.

Question. Then the increased bore of the smooth-bore gives an increased weight to the gun?

Answer. The rifle gun is proportionately lighter than the smooth-bore, with the same weight of projectile.

By Mr. Gooch :

Question. You say that the first experiments in this country with rifled guns were in 1851, and they were then considered a failure, and no further experiments were made, to your knowledge, until the rebellion broke out, or about that time. At that time was the Parrott gun first made?

Answer. Parrott had been making experiments for a year or two previous, but I never heard of them until about the time the war broke out. The very first of his larger or siege guns was sent to Fort Pickens, while I was there, in April, 1861. A 30-pounder Parrott was the first gun of that sort I ever saw. When I came back here in July, 1861, just before the first battle of Bull Run, and joined General McDowell's army, I found there several batteries, or parts of batteries, of the 10-pounder Parrott gun, and those were the first I ever saw of those. There were also at that time a few of the old pattern 6-pounder guns, rifled, for James's projectiles.

Question. Is it the fact that rifled guns were immediately introduced into the service as fast as they could be obtained, both for field service and for heavy ordnance?

Answer. Yes, sir; but more rapidly for field service than for sea-coast or fortification service, because there was greater necessity for it.

Question. Has there been, to your knowledge, any delay which could have been avoided in introducing these guns into service?

Answer. I think not.

Question. Can you tell us what progress had been made in Europe with rifled guns prior to 1860?

Answer. I think experiments there, in regard to rifled guns, had been confined entirely to field-guns. It is possible they may have had some experiments with guns of larger calibre; if so, I am not aware of it. But England, France, Prussia, and Austria I know had rifled field-guns in 1860, but they were all of different patterns; that is, each nation had its own peculiar kind of gun. Sweden has not to this day introduced the rifled gun into her service. In that country it seems to be still considered an open question; and not having the necessity for introducing them, they are still experimenting with them. And I suppose we ourselves would still have been experimenting, but for this war.

Question. Will you describe to us the peculiarities of the Dahlgren gun, if you can?

Answer. The Dahlgren guns of corresponding calibres are shorter than the army gun, and its exterior form is very different from the army gun. The Dahlgren 15-inch gun is a much shorter gun than the army 15-inch gun; and I have understood that the reason for that was in order to get it into the turrets of our monitors. And I consider that the principal reason of the prejudice in many minds against the 15-inch gun in regard to its efficiency, that it is the navy gun that has been experimented with, or rather the results derived from the practice with the navy gun are those upon which those opinions are based.

By the chairman:

Question. What is the difference between what is called the Rodman 15-inch gun and the 15-inch guns used on board our monitors?

Answer. The navy 15-inch gun is shorter than the army 15-inch gun. The distribution of the metal is different in the same sections of the two guns. In other words, the models of the two guns differ essentially.

By Mr. Gooch:

Question. The navy 15-inch gun, although not the Rodman gun in form, is cast hollow, upon the Rodman principle of cooling from the inside?

Answer. Yes, sir.

Question. Is there a gun which, owing to the peculiarity of its shape, is called the Rodman gun?

Answer. Yes, sir. The 8, 10, 13, and 15-inch gun. The army 15-inch gun, I understand, was designed by Major Rodman. The navy 15-inch gun was designed by Admiral Dahlgren. The models of the two guns differ.

Question. Do you think the efficiency of the navy gun is impaired by being made shorter than the army gun?

Answer. Yes, sir. Its efficiency is impaired in this way: it has a lower initial velocity, and that is the great objection urged against the Rodman gun, that its initial velocity is too low.

Question. Is the shortening of the gun for naval use a necessity?

Answer. I understand it is, in order to get the gun within the turret of the monitors.

Question. In your opinion, is the distribution of the metal in the Rodman gun better than in the Dahlgren gun?

Answer. I think it is. It is my individual opinion that Rodman's model is best.

Question. If the gun is to be made only of the length of the navy gun

would you then consider that the Rodman pattern would be better than the Dahlgren pattern?

Answer. I would, for the reason that I think he distributes the metal more advantageously for the endurance of the gun.

By the chairman :

Question. The initial velocity can only be increased by increasing the charge of powder?

Answer. The length of the gun has something to do with it.

Question. How is that? The longer the gun the greater the initial velocity?

Answer. Not always; you cannot carry that principle out.

Question. Do tests and experience both combined give you confidence in guns cast upon the Rodman principle as being efficient? I speak of the 15-inch guns, with which we are arming our monitors.

Answer. Yes, sir.

By Mr. Gooch :

Question. Do you believe as heavy charges of powder are now used as can be used advantageously and with safety?

Answer. I think that in the army 15-inch gun a heavier charge might be used: that is my own opinion.

Question. Have you any information in relation to the navy gun in that respect?

Answer. I have not such information as would justify my speaking positively on that point.

Question. Are experiments now being made with the view of determining whether heavier charges of powder can be used?

Answer. I understand there are with the army gun; and I have heard that such is the case with the navy gun. I know that they have increased the charge in Admiral Dahlgren's other guns, and they have found out that they can stand much heavier charges, and I think the opinion of the navy is, that had they known that at the time of the fight between the Monitor and the Merrimac a very different story would have been told. But the orders were very positive not to use heavy charges.

By Mr. Loan :

Question. Will you describe the difference between the Rodman gun and this that you call the navy gun, where there is a difference in the distribution of the metal, and wherein you think the advantage is in favor of the Rodman model?

Answer. It is hardly possible to describe it, except with plans of the two guns.

Question. Why do you think the model of the Rodman gun better than the model of the other?

Answer. I think the distribution of the metal in the Rodman gun gives greater strength than in the Dahlgren gun.

By Mr. Gooch :

Question. In the Rodman gun is the metal more equally distributed throughout than in the Dahlgren gun?

Answer. Yes, sir.

By Mr. Loan :

Question. What disadvantage, if any, results from shortening the gun to be used in these turrets?

Answer. I think that it lessens the initial velocity of the projectile.

Question. In what way?

Answer. I suppose by not keeping the projectile long enough in the bore of the gun for all the powder to act upon it. The ignition of the powder is gradual,

and the ball is being acted upon by these gases all the way out, and the moment it leaves the muzzle of course there is an end of that.

Question. What is the difference in length between the Rodman gun and the navy gun, the bore being the same in each?

Answer. I do not know the exact number of inches. I have always understood the reason that they made the gun shorter was because they wanted them just short enough to get inside the turret of the monitor. And I have always thought they would have had them longer but for that.

Question. And in consequence of the shortening of the gun you are inclined to think that the initial velocity is decreased?

Answer. Yes, sir.

Question. And that would occur in any other gun of equal length?

Answer. Yes, sir. As to the difference in shape, I think it merely affects the endurance of the gun.

By Mr. Gooch:

Question. Do you know whether the government pays any "royalty" to any owner or patentee of any of the guns now in use?

Answer. Only from hearsay; I do not know officially. I have understood that the government pays a "royalty" for all guns cast hollow. What that "royalty" is, or to whom it is paid, I do not know. I understand that Mr. Charles Knap, of Pittsburg, owns the patent; but this is merely common rumor, and I cannot vouch for its accuracy.

Testimony of Captain Alfred Mordecai.

WASHINGTON, February 1, 1864.

Captain ALFRED MORDECAI sworn and examined.

By the chairman:

Question. What is your position and rank in the service?

Answer. Captain of ordnance.

Question. Where stationed?

Answer. At Hilton Head; or in the department of the south, as it is designated.

(The resolution of the Senate, of January 25, in relation to heavy ordnance, was read to the witness.)

Question. What have been your opportunities to know the efficiency of our heavy ordnance?

Answer. I have had a great deal of experience with the heavy rifled guns, but not much with the smooth-bores.

Question. I will ask the question in the very words of the resolution. What do you say in regard to "the character and efficiency of the heavy ordnance now used in the armament of our fortifications"?

Answer. The character of the ordnance: they are the smooth-bore and the rifled cannon. The smooth-bores, of the new ordnance, are confined to the 8, 10, 13, and 15-inch columbiads. The rifled guns used in the service are almost entirely the 100-pounder, the 200-pounder, and the 300-pounder Parrott.

Question. That is the character of the ordnance now being supplied for our fortifications and for the navy?

Answer. Yes, sir; the only additional gun, that I know of, that the navy has, is the 13-inch gun.

Question. Do you know anything of the gun called the Rodman gun?

Answer. Yes, sir.

Question. Will you describe the manner of manufacturing it, and the advantages it is supposed to possess?

Answer. The Rodman guns, which is the name given to the four columbiads, the 8, 10, 13, and 15-inch guns, are cast hollow instead of solid, as formerly.

The advantage of this mode of casting is supposed to consist, or does consist, in the extra strength imparted to the metal immediately about the bore of the gun; this being caused by the cooling taking place from the interior of the casting instead of the exterior.

Question. Where was this gun first introduced?

Answer. The first one I know of having been mounted for use in service was in 1861; that was in New York harbor, on Fort Richmond. It was experimented upon for several years previous.

Question. Where was that gun manufactured?

Answer. At Fort Pitt foundry, Pittsburg.

Question. What was its calibre?

Answer. I think it was fifteen inches.

Question. To what tests have these guns been subjected, to your knowledge?

Answer. The first one, or one of the first, cast, was subjected, at Old Point Comfort, to a series of experiments with large charges of powder; but I am not able to state the number of rounds fired, or the particulars.

Question. Are you acquainted with the guns with which the monitors are armed—the eleven and fifteen-inch gun?

Answer. No, sir, I am not.

Question. What reasons have you for supposing that those tests are satisfactory?

Answer. The experiments that have been made with those guns have proved that they will stand large charges of powder and heavy projectiles, and, to the best of my knowledge, those tests have been entirely satisfactory.

Question. This gun has been criticised—those in the navy—by insinuating that they would not bear powder enough to propel the ball with sufficient energy.

Answer. I think they have borne every test to which they have been subjected with perfect safety to the gun.

Question. Those are smooth-bore guns?

Answer. Yes, sir.

Question. Where are those large guns manufactured, so far as you know?

Answer. Those for the army are now manufactured at the Fort Pitt foundry, Pittsburg, and at South Boston; those are the only two places I know. The navy have guns of the same calibre manufactured at Reading.

Question. You have spoken of the manner of fabricating this gun. Was that method known in Europe, or anywhere else, previous to Major Rodman's invention?

Answer. Not to my knowledge.

Question. Do you know about what time he invented this method of constructing guns?

Answer. I think it was in 1859; about that time.

Question. What do you know about the "royalty" that the government pays for those guns to the inventor, or his assignee?

Answer. I know nothing at all about it, more than what I have seen in print, in congressional reports.

Question. Who would have charge of that matter, so as to know about it?

Answer. The officers of the Ordnance Bureau Captain Benton, I think, would know more about that than any other officer now in the city.

Question. You have described to us the Rodman smooth-bore gun, and have also mentioned that there was another gun that was principally used as a rifled gun; that was the Parrott gun?

Answer. Yes, sir.

Question. When, so far as you know, was that Parrott gun invented?

Answer. The smaller Parrott guns were invented as early as 1857 or 1858:

perhaps 1858 would be about the date. The first heavy gun on the Parrott plan for sea-coast service was introduced in 1861.

Question. You are well acquainted with that gun?

Answer. Yes, sir; I was stationed a year at the foundry where the guns were first manufactured.

Question. In what does its specialty consist—in what is it distinguished from the old guns before that?

Answer. It is distinguished by being composed of both cast-iron and wrought-iron, and in being rifled.

Question. The body of the gun is cast-iron, and it has a wrought-iron jacket, as it is called?

Answer. Yes, sir.

Question. And that is supposed to give it great strength?

Answer. Yes, sir.

Question. Do you know anything about the "royalty" paid for that gun?

Answer. There is no "royalty" paid; that is, there is nothing paid for the patent. The guns are rated at a certain cost, which was established when they were first introduced, and which has not been altered since.

Question. Do you know whether the cost to the government is increased by reason of the patented invention?

Answer. I think it is not.

Question. Do you know the price of those two guns, the Rodman and the Parrott, and which is the cheapest?

Answer. The best comparison would be between the largest of each, the 15-inch gun of Rodman and the 300-pounder of Parrott. The 300-pounder Parrott costs \$4,500, and the 15-inch Rodman costs \$6,000 or \$6,500, I am not sure which.

Question. Do you remember the weight of those two guns?

Answer. Yes, sir; the 300-pounder Parrott weighs 27,000 pounds, and the 15-inch Rodman weighs 49,000 pounds, in round numbers. The weights vary a little in different guns.

Question. Do you know anything of any wrought-iron gun constructed in this country?

Answer. No, sir; I do not.

Question. There was a man by the name of Ames that got up a wrought-iron gun, which I believe was tried.

Answer. I know there were some tried, but I do not know what the result was.

Question. Are you able now to give any approximate statement as to the proportion between our rifled and smooth-bore guns in our fortifications? I mean heavy ordnance.

Answer. No, sir; I am not. I know what it is in some, but very few, of our works.

Question. Do you know whether these new guns, the Rodman and the Parrott, are superseding our old guns, the columbiads and the Dahlgren guns?

Answer. They are superseding the columbiads, as they are commonly called—the columbiad with the chamber, as we designate it. But there is no clashing between the Dahlgren gun and the Rodman gun. The Rodman is being used entirely by the army, and the Dahlgren entirely by the navy.

Question. What is the difference between the Dahlgren gun and the columbiad?

Answer. Only in the exterior model, I believe; that is, in the new columbiads, the Rodman columbiads.

Question. What is the difference between the Dahlgren gun and the Rodman gun?

Answer. They are both cast upon the same principle, but the exterior forms differ somewhat.

Question. What advantage is one supposed to have over the other?

Answer. None whatever, that I know of. The one, in its exterior form, is supposed to be calculated upon theory principally, and the other principally upon practice.

Question. Which is theory, and which is practice?

Answer. The Dahlgren gun, I believe, is more of practice, and the Rodman more of theory.

Question. How fast are these guns being manufactured? Have you any idea of that?

Answer. No, sir; I have not. I know the rate at which the Parrott guns were being manufactured for the last year, but I am not able to state what the rate is at present.

Question. How was it during the last year?

Answer. During the last year the rate of manufacture was about one 100-pounder a day, or two 200-pounders a week.

Question. You mean all the manufactures we have in the country?

Answer. Yes, sir; of that gun.

Question. Do you know whether we have increased our works since then?

Answer. Yes, sir; we have.

Question. But you do not know to what extent we can now make those guns?

Answer. No, sir; I do not.

Question. Has there, that you know of, been any particular delay in the manufacture of those guns?

Answer. There has been no delay in the manufacture. There has been delay in furnishing the number required, arising from the fact that they were made only at one establishment, and that establishment was not able to supply them as fast as called for. I speak now of the Parrott gun.

Question. Is it the policy of the government to supersede entirely the old-fashioned guns, and substitute the new ones in their places?

Answer. Yes, sir.

• Question. Do you know anything about the English and French improved guns?

Answer. No, sir.

Question. You would not be able, then, to say whether our best guns are equal to the best they have?

Answer. I could say that my conviction is that our guns are the best; but I have no personal knowledge of the matter.

Question. Have you seen used what the English call their Whitworth gun?

Answer. Yes, sir; I have seen that gun used.

Question. What kind of a gun is that?

Answer. There are two Whitworth guns, one breech-loading and the other muzzle-loading. The general form of the two is the same. They are built-up guns, made of steel and wrought-iron. The breech-loading has a bore of one metal, a breech-piece, and three exterior bands, making in all five pieces.

Question. Has that gun a range and accuracy superior to our Parrott gun?

Answer. Those that I saw used had not. Two of them were captured by the navy, and were used against Fort Sumter. The guns both gave out, and their accuracy was not equal to that of the Parrott.

Question. That was shown on the actual trial of the guns?

Answer. Yes, sir.

Question. What do you say of the English Armstrong gun? Have you any knowledge of that gun?

Answer. I have very little knowledge of it, indeed. I know it is a built-up gun; that is about all that I know about it.

Question. As to its efficiency and durability you cannot say?

Answer. No, sir.

Question. From your experience in the use of the Rodman and Parrott guns in actual service, have you reason to have full confidence in their efficiency, strength, and durability?

Answer. I have reason to believe them perfectly efficient; but in the strength of some of the Parrott guns I am not very confident. The 200-pounder Parrott, I think, should be improved upon in regard to strength.

Question. Some of them have given out?

Answer. Yes, sir.

Question. Under what circumstances—in actual trial?

Answer. Some of the 100-pounder Parrotts gave out; but that was caused by the circumstances in which they were used. They were used in batteries where there was a great deal of sand in motion, and sand injures guns extremely. The 200-pounder Parrotts I do not think were injured so much by the sand, but their failure was due to the weakness of the guns.

Question. A great deal of experience must have been had at Charleston in the attack upon Fort Sumter?

Answer. Yes, sir, we have had a great deal of experience there.

Question. To what extent have those guns failed there?

Answer. I can give you the number that failed; but I do not recollect now the number that were used. The failures of the 200-pounders are 6 in number.

Question. They were playing upon Sumter?

Answer. One of them was playing upon the city of Charleston; the other five were playing upon Sumter.

Question. How many do you suppose were used there? You say you do not know exactly.

Answer. I think I have a memorandum here. (Referring to some papers.) There were ten 200-pounders used by the army, of which six failed.

Question. To what was the failure attributable, and in what did it consist principally?

Answer. It consisted principally in the blowing out of the breech.

Question. After how many rounds?

Answer. The number of rounds varied. In one case the gun failed after 35 rounds; but it had been fired entirely at an elevation of 35 degrees, and with an increased charge of powder. The others, which were fired at moderate elevations, failed after an average of 230 rounds.

Question. What weight of projectile do you fire from a 200-pounder? It is not really a 200-pound projectile, I understand.

Answer. No, sir; the shell used, when filled, weighs 155 pounds; the solid projectile weighs 150 pounds; the shell is the heaviest.

Question. How is it that the shell is heaviest?

Answer. It is more elongated. They are of about the same weight before the shell is filled.

Question. What do you say in regard to the accuracy of this Parrott gun?

Answer. In accuracy it cannot be surpassed by any other gun. Of the 100-pounders thirteen in all were injured; one lost its muzzle, it being blown off by the explosion of a shell in the gun.

Question. That was really in consequence of no fault in the gun?

Answer. No, sir. All the others were injured by sand, and the shell exploding in the gun.

Question. So you conclude that the 100-pounders would be enduring enough?

Answer. Yes, sir; I think so.

Question. What do you know of the strength and durability of the 15-inch guns on board the monitors?

Answer. I know very little about them. They are fired, I know, by the navy in the monitors, if they can help it, not above 400 rounds each. But I know that some have been fired more than that.

Question. Do you know the proportion of powder to the weight of the projectile that they use, and whether it is equal to that of the Parrott guns?

Answer. I think the proportion of powder is greater in relation to the shot than in the Parrott gun. In the Parrott it is one-tenth the weight of the shot; in the Rodman gun it is greater than one-tenth. But the charge in the Rodman gun is varied more than in the Parrott gun.

Question. For what reason?

Answer. It requires a certain charge of powder to give the rifled motion to the rifled projectile to make it take the grooves, and above that, for general service, there is no extra charge required. In the smooth-bore gun a low charge of powder will project the shot as well as a high charge, only it will be at different velocities.

By Mr. Loan :

Question. I hardly understand your last answer. You say a low charge will propel the shot from the smooth-bore as well as a high charge, but at different velocities?

Answer. I mean that in the smooth-bore gun any charge of powder will send the shot from the bore and give it the motion desired; but you increase the charge to increase the effect.

Question. It would equally discharge the missile from the gun, you say, but at different velocities?

Answer. Yes, sir; but it would not be equally effective.

Question. Do you mean that a low charge of powder would send the ball, for instance, one mile, and a high charge would still send it only one mile?

Answer. No, sir; that is not what I mean.

By the chairman :

Question. Have you any further statements to make in regard to your experience with these guns and the observations you have made of their efficiency and usefulness?

Answer. The only gun in which I have a want of confidence is the 200-pounder Parrott. All the other guns, I think, will give all the results desirable.

Question. Have you reason to believe that they are as efficient as the improved guns in Europe?

Answer. Yes, sir; I think equally, if not more so.

Question. And you have full confidence in the 15-inch guns that are used on board the monitors?

Answer. My confidence in the 15-inch guns that are on board the monitors would be founded merely from comparison with those used by the army. I have full confidence in those used by the army, and I believe the others to be equally as good.

Question. You have been engaged in the siege of Charleston?

Answer. Yes, sir.

Question. How long have you been engaged there?

Answer. I joined General Gillmore when he first started out on the Charleston expedition, and have been with him until I left, on the 15th of January.

Question. In what capacity did you act there?

Answer. As chief of ordnance for the department.

Question. Will you give us your observations upon the efficiency of the guns in actual service there in the field?

Answer. All the guns used in the siege of Charleston gave perfect satisfaction in regard to their accuracy and the effect of the projectiles, but the failure in the Parrott guns was found to be one great objection.

Question. Did you make use of any smooth-bores in the attack upon Sumter or upon the city?

Answer. We used against Sumter two 10-inch columbiads; but they were not cast by the United States government; they were cast by the confederates at Richmond; but they were of the same calibre, however, and the same construction as the 10-inch Rodman columbiads.

Question. How efficient were they in their long-range shots compared with the Parrott?

Answer. They were not used at long ranges; they were used only against the walls of Sumter, at a range of thirteen hundred yards.

Question. How did they work there?

Answer. They worked very well. The reason for using them was the advantage derived from the spherical projectile over the elongated projectile when fired into sand. The elongated projectile, it was found, would ricochet over the sand-bank, while the spherical projectile would remain in the sand-bank. I use the word "sand," although the walls were not all of sand, but partly of brick. In regard to these rifled guns, I should, perhaps, state more particularly the cause of their failure. The rifled guns complained of as failing were the 100 and 200-pounders of Parrott. In regard to the 100-pounders I have explained already.

Question. What kind of a gun was the one called the "swamp angel?"

Answer. That gun was a 200-pounder Parrott. It was fired thirty-five rounds, with eighteen pounds of powder and a 160-pound projectile, at an elevation of thirty-five degrees. The breech was blown out at the thirty-fifth discharge. The cause of the failure of that gun is attributed entirely to the high elevation.

Question. The strain is in proportion a great deal to the elevation?

Answer. It increases with the elevation.

Question. To what distance were you enabled to throw the projectile?

Answer. A distance of about five miles.

Question. Could you make it effective at that distance?

Answer. We could make it effective as far as striking in the city of Charleston is concerned, but not for striking any building, or even a fort, at that distance.

Question. But you could fire into the city?

Answer. Yes, sir.

Question. When did you leave there?

Answer. On the 15th of January. I have mentioned that six of the 200-pounders have failed, one being what is commonly known as the "swamp angel." Of the other five, three broke in a similar manner, the breech being blown out. The cause of the failures of these three guns was thought to be weakness in construction. The other two 200-pounders that failed stood, the one 599 rounds, and the other 522 rounds. The three in which the breech blew out were fired an average of about 230 rounds. There were two 200-pounders, used by the navy in a similar battery on shore, which stood upwards of 660 rounds each without being injured. The difference in the endurance of the 200-pounders used in the navy and those used by the army was attributable to the use of grease or oil by the navy to lubricate the projectile and grease the bore, which was not done by the army. That, I think, embraces all the 200-pounders. In regard to the 100-pounders, there were 29 of them used. Of this number one was injured by having its muzzle blown off, in consequence of the bursting of a shell in the bore. Two 100-pounders had the breech blown out in a manner similar to the 200-pounders. The causes of failure in these instances were sand in the muzzle of the gun, and the bursting of the shell in the bore at high

elevation. The main cause was thought to be the explosion of a shell in the bore of the gun, as, after the bursting of the guns, pieces of the shell were found in the bore of each. Of the remaining 100-pounders 10 failed; eight of which were placed in batteries in which there was a great deal of sand in motion in the air; and in many instances shell were found to have exploded in the bore of the gun. To these two causes would be attributable the failure of the guns.

Question. Then, notwithstanding those failures in the 100-pounders, you still have confidence in them?

Answer. Yes, sir; and that is the general impression of those who used them.

Question. If I have understood you, you think the 200-pounder is not strong enough?

Answer. Yes, sir, that is my impression.

Question. And does that objection exist to a still greater degree in the 300-pounders?

Answer. I will explain about that. There were two 200-pounders used in the operations in Charleston harbor. One of those had eighteen inches of the muzzle blown off by the explosion of a shell in the bore. But after this accident it was fired upwards of 250 rounds, giving most excellent results. The gun was then rejected on account of a crack which had been caused at the time of the blowing off the muzzle, which crack extended back towards the breech more and more as the gun was used. The other 300-pounder is still in use, and has stood upwards of 500 rounds. In accuracy these 300-pounders are thought to surpass both the 100-pounder and the 200-pounder. I think that embraces about all the information I have to give.

Question. Suppose the body of these Parrott guns was made on the Rodman principle, would it not have a tendency greatly to strengthen them?

Answer. It would, and those guns are now being made on that principle; the 200-pounders and the 300-pounders, both.

Question. Still retaining what is called the wrought-iron jacket?

Answer. Yes, sir.

Question. The Parrott guns, constructed in that form, that is, cast upon the Rodman plan, have not been tried as yet, to your knowledge?

Answer. They have not, though some are in process of being manufactured, and will be tried very shortly.

By Mr. Gooch :

Question. Those 300-pounders that have been in use were not cast on the Rodman principle?

Answer. No, sir; none of the Parrott guns yet in use were cast on that principle.

Question. Did the explosion of the shells in the bore of the gun result from a defect in the manufacture of the shell?

Answer. Yes, sir.

Question. Did the sand which was supposed to be in the muzzle of the gun contribute to that explosion?

Answer. It did not contribute to the explosion of the shell, but it contributed to increase the strain on the gun by the increased friction.

Question. You say that the 300-pounder Parrott gun which had eighteen inches of the muzzle blown off was used afterwards with most excellent effect?

Answer. Yes, sir.

Question. Was its range as great and as accurate as before?

Answer. Yes, sir, equally so. It was not fired, however, to its extreme range, and never has been. The only way we have of judging was by the elevation required.

Question. What was the range at which it was fired?

Answer. About 4,200 yards.

Question. Was the fact that this gun had a range apparently as good after

the accident as before, and as accurate, discerned by the scientific men who had knowledge of the fact, and any conclusion come to by them?

Answer. No, sir, it was not; not to my knowledge. It was merely taken as a hint, as you may say, an indication that a gun can be equally as good with a shorter bore.

Question. In your own opinion, and that of others competent to judge who saw the guns which had exploded, could the 100-pounders and 200-pounders Parrott be so constructed as to be made efficient? and if so, what is necessary to make them safe and durable guns?

Answer. It was considered that they could be strengthened by increasing the thickness of the cast-iron about the bore of the gun towards the breech.

Question. Still retaining the jacket?

Answer. Yes, sir.

Question. Since the result of the practice with the guns used by the navy, has not the practice of lubricating the projectile and the bore of the gun been adopted by the army?

Answer. Yes, sir, it has.

Question. Was it practiced by the army before that?

Answer. No, sir. It was not considered absolutely necessary; but the experience had with these guns before Charleston showed that more importance should be attached to that matter than has heretofore been.

Question. Has that always been the practice in the navy?

Answer. Yes, sir. When I say "always" I mean to the best of my knowledge.

By the chairman:

Question. Do you know whether any apprehended weakness on the part of these large guns on board the fleet has been the cause of any delay there?

Answer. No, sir, not that I know of.

Testimony of Captain James G. Benton.

WASHINGTON, February 2, 1864.

Captain JAMES G. BENTON sworn and examined.

By Mr. Gooch:

Question. What is your rank and position in the service?

Answer. I am captain in the Ordnance department. From April, 1861, until September, 1863, I was stationed in the Ordnance Office in this city as assistant to the Chief of Ordnance. Since that time I have been on duty in command of the arsenal in this city.

(The resolution of the Senate, of January 25, 1864, was read to the witness.)

Question. Will you state to the committee the character and efficiency of the heavy ordnance now provided for the armament of fortifications?

Answer. There are two kinds of heavy ordnance now provided, the smooth-bore and the rifled gun. The smooth-bore guns are made of cast-iron, and are cast on the Rodman principle, of cooling from the interior. The rifled guns are principally of Captain Parrott's plan; the body of the gun being made of cast-iron and the breech reinforced with a band of wrought-iron. In addition to these guns, the department has been and is now rifling all the old smooth-bore cannon in the service, and banding or reinforcing, on Captain Parrott's plan, the 42-pounders. It is not considered necessary to band the 24's and 32's; they are considered to be sufficiently strong without it.

The smooth-bore guns now being used are the 8, 10, and 15-inch columbiads, throwing round projectiles weighing 64, 125, and 430 pounds respectively. The rifled guns furnished by Captain Parrott for sea-coast defence are the 100-pounder, 200-pounder, and 300-pounder. The weights of the projectiles now used in those guns are 86 pounds, 160 pounds, and 250 pounds respectively. These guns were originally intended to carry heavy projectiles, weigh-

ing 100, 200, and 300 pounds respectively; but it was found that shorter, and consequently lighter, projectiles answered a better purpose, with a lighter charge of powder, and have a better range. The charge of powder for the 100-pounder Parrott is 10 pounds, 16 pounds for the 200-pounder, and 25 or 26 pounds for the 300-pounder. For the smooth-bore gun the charge of powder is, for the 8-inch gun, 10 pounds; for the 10-inch gun, from 14 to 18 pounds, as may be necessary; and for the 15-inch gun, from 50 to 60 pounds.

The old guns now being rifled, the 24, 32, and 42-pounders are intended to carry projectiles weighing double the weight of their old round shot, with a charge of powder of about one-tenth the weight of the projectile.

The smooth-bore guns, I think, are all efficient guns for the service, within their proper sphere. Some of the Parrott guns have burst in service; but it is the opinion of those persons who have had the management of them in service, that their bursting may have arisen from being improperly loaded—it is difficult to say how; and perhaps there may have been some defect in the model of the 200-pounders, which are the guns which have failed principally. Of the smooth-bore guns, before referred to, none of them have ever failed in the service, that I am aware. I consider them very efficient guns indeed for sea-coast service. The rifled old guns will answer to take their places until heavy guns can be procured. It is the intention of the department, I believe, to use those guns only until heavier guns can be procured.

I consider the 15-inch gun the most formidable gun now in use for sea-coast service. It has not quite so long a range as the heavy rifled gun. Yet for most positions in sea-coast defence it is more effective than the rifle, because the range is oftentimes limited. Forts are situated so as to defend limited channels; and provided the guns have sufficient range for this purpose it is all that is required. The 15-inch gun has great power for smashing in the sides of vessels, and I think it produces a more destructive effect than a rifled gun, within its range, against an iron-clad vessel; and smooth-bore cast-iron guns are the cheapest guns that are made for sea-coast service. The great tendency now is to get immense velocities. That seems to be the desire of all projectors of cannon. But to do that, they are obliged to use a large charge of powder, which strains their guns enormously. The consequence is, that they may get a gun which will stand a few rounds, but not a succession of rounds; a thousand rounds, for instance. That is the reason of the failure of guns abroad. The English Armstrong and Whitworth guns, and the steel guns of Krupp, in Prussia, were made at an enormous expense, but have failed to stand the heavy charges designed for them. The principle followed in this country is to use moderate velocities which will produce very considerable results, and get guns that will stand a repetition of firings; so that if we cannot produce the effect desired with one blow, do it with two or three. The strain on a gun increases very much with the increase of the charge of powder, while the velocity does not increase proportionately as the charge is increased. To illustrate what I mean: if we get a certain velocity with a certain charge of powder, increasing the charge of powder to twice the amount does not give twice the velocity, but we have a great deal more strain upon the gun. Therefore, the best plan is to keep the charge of powder within moderate limits, such as our guns will stand. I think the policy pursued by the ordnance department in this country is a better one than that pursued abroad, inasmuch as our guns are much cheaper than theirs, and at the same time do good service. Our 15-inch guns cost only \$6,500, and they weigh 50,000 pounds each. The 20-inch gun which the ordnance department is now making is intended to take a charge of one hundred pounds of powder, and to throw a thousand-pound ball, and can be made for between \$12,000 and \$13,000. I do not think there has ever been a gun made that will have the power of this gun; and I have every confidence it will stand, judging from the 15-inch gun, which I know is a perfectly successful gun, and one

which strikes a harder blow than any successful gun ever made. I will not say that it strikes a heavier blow than the Armstrong 600-pounder, which is made of wrought-iron at a very enormous expense, and which stood only a few rounds.

Question. Is it not oftentimes a necessity to increase the charge of powder beyond what you would desire to use in a gun, in order to accomplish what you wish to do?

Answer. I think it is. I think it may be desirable to increase the charge of powder to effect a certain object, and I think the gun will stand a few discharges of that kind, but not many. But in breaching, as at Fort Sumter, I would prefer to use moderate charges, because the accuracy of the gun enables us to hit the object nearly every time. A large charge would be likely to break the gun.

Question. Is it not often true that one shot with a great velocity will accomplish what six shots striking at the same point will not accomplish with a less velocity?

Answer. I do not think so; I think the six shots will produce more effect than the one. In the first place we have no target made yet that will stand against the 15-inch gun, fired with fifty or sixty pounds of powder, as I am informed; and there is no doubt the gun will stand sixty pounds of powder. Admiral Dahlgren latterly uses thirty pounds of powder in his 11-inch gun, which was originally intended for only fifteen pounds of powder. But I think it would not be safe to fire the gun very often with thirty pounds of powder. One shot against an iron-clad vessel may not penetrate much, but it shatters and loosens the rivets and plates, and the second shot is very apt to destroy everything if it strikes near the same place. Besides, all sea-coast batteries have a greater or less number of guns bearing upon the same point; so that if one shot does not succeed in destroying the vessel, the second, third, or fourth shot may do it, as all the guns may be fired at once upon the same vessel.

Question. When you say that no target has yet been made that will stand against the 15-inch gun, at what range do you mean?

Answer. I think the experiments have been made at a range of about two hundred yards. I have this from navy officers who conducted the experiments.

Question. Do you know what would be the result if the range were increased? would you not then require an increased charge of powder?

Answer. The diminution of the velocity of these large projectiles is comparatively slight for ordinary ranges. They retain their velocity in consequence of the large momentum they have stored up in them.

Question. Have you anything more to add to the statements you have been making?

Answer. I would state that the propositions made to the ordnance department to construct wrought-iron guns of a large size have been at a very high price, generally a dollar a pound. One of the guns which it was proposed to make was a 13-inch rifled gun, the weight to be 56,000 pounds, in round numbers, and the price to be paid for it was a dollar a pound, which would make it cost as much as four of the 20-inch or 1,000-pounder gun of the War Department. There has been no price submitted to the department for large wrought-iron guns less than eighty cents or a dollar a pound. I state this merely to show how expensive these heavy wrought-iron guns are, and how much more work I think cast-iron guns can accomplish for the same amount of money expended. I might give the amount in 15-inch guns, which we know to be successful guns. The 1,000-pounder gun has not yet been made, and its success is still perhaps problematical. But the price of that wrought-iron gun would purchase about eight of the 15-inch gun—I mean the wrought-iron gun of 13-inch calibre. I think the War Department has ordered an experimental wrought-iron gun to be made at a dollar a pound.

Question. Will you now describe, so far as you have not already done so, each of the guns used for heavy ordnance in our fortifications, with its peculiarities?

Answer. In regard to the smooth-bore guns, I have already given the calibre, the material of which, and the manner in which they are made—that is, upon Major Rodman's principle—the weight of the projectile, and the charge of powder; and I have given the cost of the 15-inch guns. I can give the cost of the others as it was when I left the Ordnance Office; but I am not certain that it has not been changed since then. I left about the middle of September last.

Question. I want you to describe the different guns used in this country for heavy ordnance, and then those used in Europe, and compare the two kinds as to merits, &c.

Answer. I have already stated that I think the guns used in this country are of larger calibre than those used abroad—certainly than those used in England. I am not familiar with those used in France or in Prussia at this time. But our guns are of larger calibre than those used in England, and are very much cheaper. And I consider them, in consequence of their larger calibre, to be more powerful than the guns now used there.

Question. How does the Parrott gun compare with the Armstrong and the Whitworth gun?

Answer. It is a much cheaper gun—very much cheaper; but it does not fire so heavy a charge of powder, and the range and penetration of its projectile is necessarily not so great as that of the Armstrong or of the Whitworth gun. In the first place, I think the Parrott gun a very effective gun when properly used, and in consequence of its cheapness more desirable than the Whitworth or the Armstrong gun. Those guns until lately have been made on the breech-loading principle; but that principle has been abandoned, and they make them now mostly muzzle-loading. The Armstrong and the Whitworth guns are constructed alike, I believe; they are built-up guns—that is, there is an inner tube of wrought-iron or steel, and other tubes very nicely turned and bored out, which are heated and then slipped over this tube and allowed to cool and shrink on it, one over the other, until the requisite thickness is obtained. But some of these have thus far failed, and have not been extensively introduced into the English service.

Question. Do those guns possess any peculiar merits on account of which you would deem it advisable that we should adopt some of them into our service?

Answer. I would not recommend their adoption at all. In the first place, I believe the English, although they are still experimenting with the Armstrong gun, have abandoned all the old breech-loading Armstrong guns except the 110-pounders. And if I understand correctly, they are making no more 110-pounders breech-loading, merely using such as they already have. They made a large number of them at a very great expense. I consider the Parrott gun, considering its cheapness, the most effective rifled gun there is. It has failed sometimes, but I do not know of any rifled gun that has not failed. It may be stated that quite a number of Parrott guns have failed in the hands of the army at Charleston. Captain Mordecai told me, I think, that something like twenty had failed altogether of the 100 and 200-pounders. But the navy, in their land batteries and on board their ships, have lost very few indeed, not more than one or two, if I am correctly informed. That has led many to suppose that those guns have not been properly treated and handled on the part of the army.

Question. What, in your opinion, is the best smooth-bore gun for heavy ordnance?

Answer. I think the cast-iron guns, cast on the Rodman principle, are the best.

Question. And the best rifled gun?

Answer. As I stated before, I consider the Parrott gun the best rifled gun, considering its cheapness.

Question. Is there any advantage in the Rodman mode of manufacture; and so, what is it?

Answer. Yes, sir; it gives greater strength to the gun to resist the force of the discharge, and greater strength to the surface of the bore to resist the bounding of the projectile. That has been established for twelve or thirteen years past by experiments made at the government expense. They were commenced in 1849, if I am correctly informed, by casting a pair of 8-inch guns. They were cast from the same metal, melted in the same furnace, which ran into the same pool, from which there were two outlets, the one leading to the gun cast solid in the ordinary way, and the other to the gun cast hollow and cooled from the interior. Those two guns were tried, and though neither of them stood as much as they ought, the hollow-cast gun stood very much more than the other.

Question. At whose suggestion was that experiment made?

Answer. It was made at the suggestion of the Chief of Ordnance; General Talcott was the Chief of Ordnance at that time.

Question. Was that the first gun you ever knew to be cast hollow?

Answer. No, sir; that was not the first one; but it was the first one cast by the government. Captain Rodman in 1843 or 1844 first advanced the theory of his method of casting guns. I was then stationed at the Watervliet arsenal, and I recollect seeing a letter from him in which he set forth this theory of his, and he told me that he sent a copy of that same paper to the Chief of Ordnance, General Talcott. It seems that general Talcott did not consider it of much value, and would not consent that the government should go to the expense of trying it. Captain Rodman, however, was so firmly convinced of the value of his discovery that he, with Mr. Knap, who was then one of the proprietors of the Fort Pitt foundry, in Pittsburg, went to the expense of trying it upon a pair of 32-pounders. Those two guns were made and tested, and the results were so satisfactory that the ordnance department then consented to try the principle at the government expense, and in 1849 this trial I have spoken of was made.

Since that time, up to 1858, seven pairs of guns, of 8 and 10-inch calibre, have been made and tried, and the result in every case was in favor of the hollow-cast gun, for hardness and endurance in every way. Those trials, however, developed the fact that the model of the then service guns was defective; that it could not be relied upon; that even though we might cast a gun on Captain Rodman's principle, we would not necessarily get a good gun, because there was not enough metal behind the bottom of the bore.

In 1857 the ordnance board concluded to change the form of the gun and to correct this defect. A pair of guns were cast, the one cast solid, and the other cast hollow. Those guns were fired over 4,000 times with solid shot, weighing 125 pounds, and with charges of powder varying from fourteen to eighteen pounds. Neither of the guns broke. But it was found that the solid-cast gun had enlarged to more than an inch in depth around the seat of discharge, while the hollow-cast gun was very slightly enlarged, not more than one-third as much. The experiments were made in this country.

In England some experiments were made to verify this mode of casting guns. You may recollect that during the Crimean war great difficulty was experienced with the mortars at Sweiborg; they burst after 200 or 300 rounds, and very great complaint was made of them. Sir Charles Napier thought it was due to the too rapid firing; others thought it was due to some defect in the metal. They finally tried Captain Rodman's plan, and had two pairs of 13-inch mortars cast, one of each cast hollow, and one of each cast solid. They were suspended then, like a pendulum, so that they could be fired very rapidly. I am told that they fired them so rapidly that they kept one and two balls in the air at a time. The solid-cast mortars gave way after about 700 rounds, while the hollow-cast mortars were fired 2,000 rounds, and were then apparently as good as ever.

These are the facts which led the ordnance department to adopt that plan,

and to require all guns of large calibre to be cast upon it. All the 15-inch guns of the navy are now required to be cast hollow.

I do not think it is possible to make a good gun of cast metal of large calibre, say 15 or 20 inches, without resorting to Captain Rodman's plan. The shrinkage of the metal is so great in cooling that sometimes large guns, cast solid, have burst open merely in cooling. The fact which first led Captain Rodman to investigate this matter was this: He observed that chilled rollers cooled very suddenly from the outside, sometimes burst open, and he concluded that a similar strain was produced in the casting of cannon solid, although in a less degree, because cooled more slowly from the outside. Cooling from the interior, you ought not only to obviate the bursting strain, but reverse it and give additional strength to the gun.

I am not certain whether they have yet adopted this principle of Captain Rodman in France, but I understand it is the opinion of the officer in the French navy who, by direction of the Emperor, has charge of experiments with cannon, that the best way to make a heavy gun is to cast it on Captain Rodman's plan, and then band it on the Blakesly plan, or the Parrott plan, which plans are much alike.

Captain Parrott is now proving this plan. His first guns were cast solid, bored out, and then banded. But he has now completed his arrangements, and is casting them hollow.

Question. Any gun can be strengthened by being banded, I suppose?

Answer. Yes, sir.

Question. What tests are applied to those guns by the government?

Answer. In the first place, a test gun is fired with three proof charges, each of which consists of a solid shot, and a somewhat larger charge of powder than is used for ordinary service. After that the test gun is fired 1,000 rounds with service charges. If it stands it is accepted, and the contractor or founder is directed to go on and make the rest like it.

Question. What tests are applied to those other guns before they are adopted and used by the government?

Answer. There is an officer at each foundry who looks after the manufacture of the guns made there. He sees that the proper pig metal and fuel is used; that the metal is exposed to the fire in a state of fusion for a certain length of time. He measures the gun very carefully, and takes out specimens of the metal from different parts of the guns, pulls them apart to ascertain the tensile strength of the iron, and gets the specific gravity of the iron. After that the gun is fired three times with charges somewhat greater than the service charge. The service charges formerly used were very much larger. But it was found that guns were very much strained by such proof, and weakened unnecessarily, so much so that a gun which had passed proof might burst in three or four rounds afterwards.

Question. What proportion of our land and sea armament is of rifled ordnance?

Answer. I could not tell you that exactly without reference to the records; but I know that the ordnance department have endeavored to get all the heavy iron guns, both rifled and smooth-bore, that they could obtain. The rifled guns being made exclusively by Captain Parrott, they have, of course, been limited by his capacity to manufacture them. He has enlarged his establishment very much since the war commenced. I could not tell the number now furnished.

Question. Is the manufacture of that gun necessarily limited to Captain Parrott?

Answer. He is the patentee of the gun; he was told, when I was in the Ordnance Office, to go on and make all the guns he could; all the guns he could make in a year would be taken; and the same with all the other foundries for smooth-bored guns. Captain Parrott has had to make them for both the army

and navy. My impression is, that he has made, for the army and navy, over a thousand heavy guns since the war commenced.

Question. Would it have been desirable to have had those guns furnished faster than they have been?

Answer. We could have used them. Yes, sir; it would have been desirable to have had them faster; that is, to meet the calls for them. I do not know that the service has suffered at all from not having those guns faster; but the ordnance department could not furnish them to meet the demands of the different cities along the sea-coast, particularly when they anticipated trouble with England. Nearly every seaboard town then wanted all its forts properly manned with the heaviest guns.

Question. If other foundries had been permitted to manufacture that gun, could not they then have been furnished to the government more rapidly?

Answer. I think they could, if there were other foundries who could have made them; I do not think that Captain Parrott would have objected to anybody's making the gun if any one had been prepared to do so. An advertisement was put in all the papers, offering to take guns from any person for a year—as many as they could make—at a certain price; none of them, however, undertook to make the Parrott gun, although I presume they could have made them if they had desired, without any objection from Captain Parrott, by paying him for the use of his patent.

Question. You do not know that it was ever suggested to any other establishment to enter upon their manufacture?

Answer. I know that there was an establishment in New York that made some small guns on Captain Parrott's plan, for the State of New York, and some of them afterwards came into the possession of the United States; but it did not make many of them.

Question. Is there a necessity now for having the Parrott gun faster than they are being furnished?

Answer. No, sir; I do not think there is; I think they are furnished now about as fast as the appropriations admit of their being paid for. My idea is, that some better gun than the Parrott gun may be produced before long. Captain Parrott may improve his gun so as to make it a better one. I think they have been furnished about as fast as they should have been furnished.

Question. When were rifled guns first introduced into our service?

Answer. We had no rifled guns in our service up to the commencement of the war in 1861; they were introduced immediately after the war commenced. I was at that time, in April, 1861, stationed at West Point, and was requested by Colonel Craig, then Chief of Ordnance, to go over to Captain Parrott's foundry and examine some of his rifled guns which he had just invented, and of which he had made a few. I was told to go there and test them, and report upon them. I did so, and since that time Captain Parrott has been making them for the service as rapidly as he could. Those were the first rifled guns introduced into the service. General James had submitted a plan, and had made a contract with Mr. Floyd, when Secretary of War, for rifling all our old guns; but when General Ripley came into the office, one of the first things he did was to have that contract set aside; and it is very well that he did so, for all our old guns would probably have been ruined by this defective mode of rifling. The contract was for \$100 each for rifling the cast-iron guns, and \$50 each for the bronze guns; we know now that the actual cost of rifling an old gun does not amount to \$10. I have been engaged at the arsenal here in rifling them for some time past.

Question. Do you know the reason why General Ripley had that contract set aside?

Answer. I do not; I think, though, it was from representations made to him of the defective character of the invention or improvement of General James.

I know that I had a great deal of talk with him myself on this point. I had had much experience in experimenting with rifled guns at West Point; and although I had never seen any guns tried that had been rifled upon General James's plan, yet I knew, from comparing the results, that that plan was very inferior to those that had been tried at West Point.

Question. Was there known at that time, or prior to that time, any plan of rifling that had been tested and proven?

Answer. None in this country; none but the Armstrong gun. I burst three large guns at West Point of different kinds, showing defective modes of rifling. One of them was a gun rifled on the French plan, which burst after a few discharges; but there was nothing adopted until the commencement of this war.

Question. Has there been, to your knowledge, any unnecessary delay in introducing rifled guns into the service?

Answer. No, sir; I think the department has sought to get all the good rifled guns it could; at least those that were reliable, and those that were reasonable in price, for that was one consideration.

Question. Do you know what "royalty" is paid to any of the inventors or manufacturers of any of the guns now in use by the government?

Answer. I know about the "royalty" on Captain Rodman's improvement in manufacturing guns. When Mr. Floyd was Secretary of War he decided to adopt Captain Rodman's plan, and required all cast-iron guns to be cast on that plan. He agreed to pay to the proprietor of the patent, who is Mr. Charles Knap, of the Pittsburg foundry, twenty per cent. over the then cost of cast-iron guns. That was afterwards confirmed by General Ripley; and, in making his arrangements with different foundries, he added $1\frac{3}{10}$ cents per pound to the cost of the gun, in order that the manufacturer might use that patent without any extra cost to himself. The old price was $6\frac{1}{2}$ cents per pound, and $1\frac{3}{10}$ cents per pound were added, and afterwards paid for these guns. Since then the price has been increased, I am told, to $9\frac{1}{2}$ cents per pound, on account of the increased expense of manufacture.

Question. Has the "royalty" been increased?

Answer. I do not think it has.

Question. So you understand the "royalty" now to be, and always to have been, $1\frac{3}{10}$ cents per pound?

Answer. Yes, sir.

Question. How about the Parrott gun?

Answer. He, being the owner of the patent, is paid a fixed price for his guns; we do not know how much profit he makes. His prices, however, have always been reasonable for his guns, and for his projectiles.

By the chairman:

Question. Do you know the difference between the price of the Rodman gun and the price of the Parrott gun?

Answer. I cannot tell you exactly. For the 10-inch Rodman gun, I think, they pay now $9\frac{1}{2}$ cents per pound. They pay Captain Parrott, for his guns, not far from double that price. The reason for that is, that there is a large amount of wrought-iron in the gun, which increases the expense.

Question. And the rifling also makes some difference?

Answer. Yes, sir; but very little, however. It would not cost more than ten dollars to rifle the gun.

By Mr. Gooch:

Question. Do you know the amount of "royalty" paid to Captain Parrott for the guns of which you spoke, which were manufactured by other parties?

Answer. None, whatever, I presume; Captain Parrott receives a fixed price for his guns.

By the chairman :

Question. Is there any "royalty" on the Dahlgren gun ?

Answer. None that I know of. That gun is used by the navy, and not the army. That gun has always cost more than the Rodman gun, for the reason that Captain Dahlgren has required it to be cast very full in the chase, and a great deal of the metal was turned off and lost. While the ordnance department of the land service has been paying $6\frac{1}{2}$ cents per pound for its columbiads, the navy has been paying the founders $8\frac{3}{4}$ cents per pound for the Dahlgren gun, in consequence of the peculiar mode of manufacturing them.

Question. Then his gun is more expensive than the Rodman gun ?

Answer. Yes, sir.

Question. With the "royalty" added ?

Answer. That has been the case.

Question. What is the difference between the Dahlgren gun and the columbiad, and which was the more expensive of the two ?

Answer. The Rodman gun is the columbiad modified ; the difference between Rodman and Dahlgren guns is in the exterior form, in the chamber, and the mode of casting. The old columbiad was cut off square at the breech, in order to get a high elevation in firing ; it is capable of being fired at an angle of thirty-five degrees elevation. Captain Dahlgren's gun is not intended to be fired at an angle of more than 10 or 15 degrees.

Question. You have stated the difference in price of those two guns ?

Answer. Yes, sir. While the ordnance department were paying $6\frac{1}{2}$ cents per pound for the columbiad, the Navy Department were paying $8\frac{3}{4}$ cents per pound for the Dahlgren, of nearly the same weight, in consequence of its being required to be turned down a great deal in the chase, and a great deal of the metal wasted.

Question. You have said that there was no "royalty" on the Dahlgren gun that you know of ?

Answer. Not that I know of. I have always understood that Captain Dahlgren invented that as an officer of the government ; that it was a part of his duty, and he claims no "royalty." Whether he has a patent or not for it, I do not know.

By Mr. Gooch :

Question. Have you any means of judging of the comparative merits of the distribution of the metal in the Rodman and the Dahlgren guns ?

Answer. I think the distribution of the metal is better in the Rodman gun. I do not think there is any very essential difference, however, in the two forms. Captain Dahlgren's gun has the metal tapering off more suddenly in advance of the reinforce, and Captain Rodman's gun tapers more gradually towards the muzzle.

There has been quite a long correspondence between Captain Rodman and Captain Dahlgren in regard to the forms of the guns. Captain Dahlgren has accused Captain Rodman of plagiarism in adopting his (Captain Dahlgren's) form for his (Captain Rodman's) gun. Captain Rodman denied it, and had a drawing made representing his 15-inch gun full size, the Dahlgren 11-inch gun with its bore enlarged to 15 inches, and the old 10-inch columbiad, which was originally invented by Colonel Bomford. Those three guns had the same axes, and the same outlines of bore. The outsides of the three guns were contrasted so as to show wherein they differed, and it was shown that Captain Rodman's 15-inch gun more nearly resembled the old 10-inch columbiad than Dahlgren's 11-inch gun.

Question. Have the affairs of the Ordnance Bureau, so far as your knowledge extends, been conducted with intelligence, energy, and integrity ?

Answer. Yes, sir; certainly with integrity and with great zeal, I may say, on the part of the former chief of ordnance with whom I served. He may have erred sometimes; and he may have created a great many enemies by refusing to adopt inventions which he thought were unfit or not suited to the service, or were too expensive. But I am very confident, in fact I know, that he was actuated solely by the interests of the service, because I have been in a position to know the fact.

Question. Have the James gun and the James projectile both proved failures?

Answer. Yes, sir. The original plan was to rifle all the old guns in the service. There was no distinct James gun that I know of. There was a James projectile, which has been abandoned long since in the service. It has done very well on one or two occasions, but there are others which are considered much superior, and it has been thrown aside.

Question. What are the peculiarities and qualities of the Ames gun, so far as you know?

Answer. Mr. Ames's guns are made of wrought-iron, in the shape of rings, welded together. Each ring is carefully turned down, and then it is put in a furnace and heated to a welding heat. It is then placed upon a mandril, and welded by a steam hammer working horizontally, or "a bumper," I think he calls it. In that way the gun is made up by a succession of rings. He has made some very strong guns in that way, but they were very expensive. Some of them have failed from large cavities forming in the bore. If there is any small flaw in the metal of the bore, it is liable to be enlarged very rapidly by the firing. The gun has not been adopted in the service. It has been tried by the navy, but it has never been tried by the army. I have understood that they have refused to make any further contracts on account of the enormous expense.

The War Department, I believe, is having a very large gun made on this principle, with a view to test it. It is not made by Mr. Ames, however, but by a man in New York, who, I am told, is the original inventor of the plan.

Testimony of Commodore John Rodgers.

WASHINGTON, February 3, 1864.

Commodore JOHN RODGERS sworn and examined.

By the chairman:

Question. What is your rank and position in the naval service?

Answer. I think I am commodore now; I have been nominated and approved by the Senate to that rank, but not yet commissioned. I have acted heretofore as captain in the navy.

[The resolution of the Senate, of January 25, 1864, in relation to heavy ordnance, was read to the witness.]

Question. Where have you been performing service for some time past?

Answer. I have been both in the James river and in the South Atlantic blockading squadron.

Question. What have been your opportunities of knowing about the strength and usefulness of the fifteen-inch gun used in the navy, sometimes called the Rodman gun?

Answer. I have seen it used in action.

Question. To what extent?

Answer. I saw it used in the attack by DuPont on Charleston, and I afterwards had an opportunity of seeing it used on a rebel iron-clad.

Question. On the Atlanta?

Answer. Yes, sir.

Question. What do you say of the strength, durability, and usefulness of that gun?

Answer. Only the heaviest ordnance which a vessel can carry ought to be used against other iron-clads. But against wooden vessels I should prefer a lighter gun.

Question. I am speaking now of the gun itself—whether it will stand a sufficient charge of powder to send a ball with the requisite force.

Answer. The special case, probably, about which you want information, is the fight with the Atlanta. She came down to attack two monitors, one of which, named the Weehawken, was the vessel I commanded. The Atlanta came down deliberately, confident that she could take two monitors. Captain Webb, her commander, told me after the fight that he was in Norfolk when the fight came off between the Merrimac and the Monitor, and because the Merrimac withstood the Monitor, he had no doubt that the Atlanta could take two monitors. I presume he was referring to the reputed greater strength of the Atlanta.

Question. The Atlanta was an iron-clad?

Answer. Yes, sir. The first shot that was fired from the Weehawken was a fifteen-inch cored shot, with a charge of thirty-five pounds of powder. The cored shot is a fifteen-inch shot, with a six-inch sphere taken out of the middle; hollowed to the extent of six inches, or of thirty-two pounds less weight than a solid shot.

Question. Is it a shell?

Answer. To that extent it is; but it is not loaded. The iron men thought that as a hollow casting is more perfect than a solid casting, the strength of the cored shot would be equal to that of the solid shot. Experiments, however, with the trip-hammer here at the navy yard, have proved that the solid shot is very much the stronger.

The first shot that was fired by the Weehawken at the Atlanta was at a distance of between three and four hundred yards, and, as I have said, with thirty-five pounds of powder. It broke a hole through the side of the Atlanta some four or five feet long, knocked in about a couple of barrels of splinters of wood and iron, wounded a whole gun's crew, and prostrated between forty and fifty men, including those that were wounded. Those who were stunned by the mere concussion remained insensible for some ten minutes. It completely demoralized the crew. They had fancied they were in a secure castle—they found they were in a paper house; and their running below I attribute, in a great degree, to their surprise. The effect of the shot I do not know of my own knowledge, of course, because I was not on board the ship; but it was reported by the officers of the Atlanta.

I have come to the conclusion, and I believe target experiments here at the Washington navy yard bear it out, that nothing which covers the ships of England and France can resist a 15-inch shot. Indeed, I think that a shot closely delivered at either the Warrior, the Gloire, or any of those vessels, would quarry a hole through the side, and if it hit at the water's edge the vessel would go down like the shot itself. Against iron-clads nothing can compensate for weight of blow. The English, I think, have been led to fear that possibly their best guns would not answer against ours; and Sir William Armstrong has made a 600-pounder gun, which report says has failed in strength.

Question. Was the object of making that 15-inch ball hollow to diminish the weight and consequent strain upon the gun, or was it merely because it was supposed it would strengthen the ball?

Answer. I think the object was mainly to diminish the weight of the shot. I had some solid shot on board at the time. I was importuned to put in solid shot, but I said no, put in the cored shot; it will have somewhat higher velocity, and I am convinced it is quite as strong. I was mistaken as to the strength.

Question. How many shots did you fire at the Atlanta before she surrendered?

Answer. The first shot demoralized the crew, and they ran below; the next discharge, of two shots, knocked in the pilot-house—she had two pilots and two helmsmen—wounded both pilots and one of the helmsmen, and all the four men fell down insensible upon the little platform in the pilot-house, thus preventing access to it. She lost her directive power, and they ran up the white flag and surrendered; but in the smoke, or from some other cause, their white flag looked blue, which I thought was their battle flag; I came down from the pilot-house, where I had been to examine more closely, when they sang out from the pilot-house, "It is the blue flag, Captain Rodgers, it is the blue flag!" I then said "go on," and we fired one discharge more, which consisted of two shots, after the vessel had surrendered. In firing at the Atlanta the first shot was the 15-inch cored shot only; the next discharge was two guns, 11 and 15-inch; that made three shots, and after the second discharge the vessel surrendered. After that I fired two more guns through mistake, not recognizing the flag, and not anticipating any such speedy end to the contest.

I will give you a little anecdote related by one of the Atlanta's officers in regard to that first shot. He was a lieutenant who had been in our service. He said that he saw the Weehawken coming up, and the captain of the gun said to him, "that round thing is turning, sir." He looked and saw the "round thing" turning; he then saw the ports trained on him, saw the flash, saw the ball coming, heard the report, and almost simultaneously had an intense sensation at the pit of his stomach. The next thing, he found himself lying on the deck; he presumed he had been there about ten minutes; he said to himself, "am I hurt?" he ran his hands over his legs, his body, and his arms, and said, "no, I am not hurt;" he jumped up and looked around for his gun's crew, and he found them all lying at his feet. With a few applications of his toe he would wake a man up, saying, "get up, get up," and the man would start to his feet. At first the man would stare about him wildly, not knowing what was the matter, but as soon as he got a little speculation in his eye he would dive below.

Question. You were engaged in the attack on Fort Sumter, or on Charleston with Commodore DuPont?

Answer. Yes, sir; I was also at the taking of Port Royal.

Question. Did you have those large guns there then?

Answer. No, sir; they were not in service at the taking of Port Royal. There was nothing used there larger than the 11-inch guns. The Wabash was the most formidable vessel on account of the greater number of her guns, and the consequent weight and concentration of her fire. She had 9-inch guns, and one 10-inch pivot gun on her upper deck, and one rifle gun.

Question. Will you tell us about the attack by DuPont in Charleston harbor? What was the effect of your guns on the fortifications there?

Answer. It was very difficult to determine what was the effect. I looked and saw the fort pitted, as if marked with small-pox, but I could not tell the extent of the damage. The walls might have been broken very extensively, without our being able, at the distance at which we were, to detect the cracks. I saw no hole through the walls, and no cracks.

Question. At what distance did you attack the fort?

Answer. I suppose we were some 500 yards from it.

Question. What is the range of those 15-inch guns—their effective range?

Answer. That would depend entirely upon what you fire at. If you were firing against wood, a very low velocity would crush it in; and even at the extreme of its range it would be very formidable indeed against any wooden structure. Against an iron-clad it would have a very slight effect at its extreme range.

Question. Is there any difficulty about the charge of powder you put in?

Dare you put in as much powder as you think would be necessary to render the ball effective?

Answer. There is no difficulty at all; the powder is arranged before the vessel leaves port, in what the ordnance officers have decided by experiment to be the proper charges. An ignorant man, for instance, would burst his gun, if the amount of powder to be used were left to his own volition. The powder is weighed out and put up into cartridges of proper size.

Question. I did not know but, to a certain extent, you increased the charge according to the distance.

Answer. That is not allowed, because the ordnance officers try all the charges properly in a battery where no lives would be lost. But if an ignorant man should burst his gun and destroy his ship it would be a national loss. All their experiments are first tried in an experimental battery, and then the proper charges are made up.

I stated that in firing against the Atlanta I used 35 pounds of powder; I am told in the Ordnance Bureau that since then they find that the guns will bear a very much higher charge of powder than that which I used; and against another iron-clad I should not hesitate to use 60 pounds of powder in that same gun.

Question. And that would add very materially to the weight of the blow?

Answer. Very materially; but the stunning effect even of that blow with 35 pounds of powder is, as far as I know, unique. There is nothing else like it that I ever heard of, of a number of men being stunned by simple concussion, without receiving any permanent injury, or any actual blow.

Question. What do you say in regard to the accuracy of the gun?

Answer. It is very accurate.

Question. How does it compare in point of accuracy with the old 42-pounder, for instance?

Answer. It is quite as accurate.

Question. And is its range quite as long as that of the old smooth-bore 42-pounder?

Answer. It is essentially the same.

Question. The range, of course, is not equal to that of the rifled gun?

Answer. It is not equal. But in an action between two ships, one armed with smooth-bores, and the other with rifled guns, I am convinced that the smooth-bores will take the rifles.

Question. Especially if the ship is fast enough to choose her distance?

Answer. Yes, sir; the smooth-bores will take the rifles.

Question. Suppose that the ship that is armed with the rifles had the greater speed, and could choose a long distance out of the range of the other?

Answer. She would rarely hit. On shore you may hit at long distances with a rifle; but a ship has three motions which tend to disturb the accuracy of the shot. She rolls; she yaws, or changes her direction; and she pitches. All these motions affect the accuracy of firing, and the extreme accuracy which is attained on shore cannot be had under ordinary circumstances at sea.

Question. And consequently at sea you have to encounter at closer range?

Answer. You have; and all the histories of naval fights, so far, show that no action at very long distances is decisive. A man involuntarily closes up with his adversary until he wants to get away from him. While he has fight in him he wants to fight closely.

Question. Are they using rifled guns to any considerable extent in the navy?

Answer. Not as broadside guns; the effect of the smooth-bore is to make a larger and more dangerous hole than the other; and it has greater accuracy at sea, for a reason which would not, at first, be taken theoretically into account. It is found the rifled shots, as soon as they strike the water, turn away or are deflected from their line of fire. The reason is very plain, as they are long projectiles. Any one accustomed to fencing knows that a light touch on the

point turns away the fiercest thrust. I have seen a rifled shot turn off at right angles after touching the water; the round shot rolls over and goes on, and is not deflected by the same cause. Then in order to avoid shooting over the enemy, sailors are carefully instructed to fire low. The chances of hitting are not very much diminished by the ball first touching the water, but if you shoot too high, your shot is, of course, entirely thrown away; and in order to insure the requisite lowness, many of the shot will hit the water first, because, the vessel being in motion, a man can only form a judgment according to his skill, more or less accurate, of the proper moment for firing. Now, these rifled shot which touch the water first will be mainly lost, while most of the round shot will be effective. Then, in consequence of the greater simplicity of the smooth-bore, it will fire more rapidly than the rifled gun; you thus have from the smooth-bore, within a reasonable distance, a more dangerous projectile, because a larger one, greater rapidity of firing, and a greater proportion of shots that will strike the enemy.

Question. You do not know, then, that they are getting any large number of rifled guns on vessels in the navy?

Answer. Everybody does not think as I do; some people think that large guns are the best, while other people prefer smaller guns; some prefer rifles, and some prefer smooth-bores; each is but for certain purposes.

Question. You are acquainted, undoubtedly, with the opinions of a great many officers in the navy about the Rodman gun and guns formed on that fashion; what is the prevailing sentiment among your men of experience upon that subject about the merits and usefulness of that gun?

Answer. The Rodman gun, as I understand it, means a gun that is cast hollow and cooled from the inside. The general impression is that that is very much stronger than one cast solid and cooled from the outside, as by the old process. The Rodman gun is cooled from the inside. Imagine a gun divided into as many layers or concentric hoops as you please; the inside one is cooled first, and consequently contracts to certain dimensions first; the one next outside, being more heated, when it cools is shrunk on to the central one, and so the successive layers or hoops reinforce one another and you get the whole strength of the metal. Where you cool from the outside the process is reversed, and the tendency of cooling from the outside is of itself to break apart the gun.

Question. The strain is in the same direction as that exerted by the charge of powder when the gun is fired?

Answer. The same. Of course the gun when cooled from the outside is carefully annealed to do away with that as far as they can; still, to the extent to which the annealing is imperfect, the gun is weaker for the greater thickness. There is a very good exemplification of the effect of cooling from the outside, in a little philosophical toy which is called "Prince Rupert's drop." Melted glass is poured into water, and is cooled suddenly in the form of a drop or globe; it is very hard on the outside, but upon a small scratch it immediately flies to powder.

Question. Larger guns are being used now, are they not, than were ever before used in the history of warfare?

Answer. Yes, sir; but I do not believe that the large-sized guns ordinarily used on our wooden vessels are advantageous. My own opinion is that in the case of a vessel found with very large guns, and one with guns of comparatively moderate size, the vessel armed with the large guns will be taken by the one which has a battery of smaller guns. Take a vessel of the Wabash class, one of the large frigates which has been the admiration of the world; her battery is of 9-inch guns. Now, the question is debated whether you shall put 8-inch guns or 9-inch guns on board of her, wishing, of course, to give her the most formidable battery. The frigate is constructed to, and will, carry a certain deck-load of iron in the shape of guns; and, as far as her sea-going qualities are concerned, it is obviously a matter of entire indifference whether you put on her the same

weight in one sized guns or another, provided it be sufficiently distributed—not all in one spot. The weight of a gun bears a certain proportion to the weight of its shot. For instance, a 100-pounder gun with 100 pounds of metal to one pound of shot would weigh 10,000 pounds; and in making a given class of guns they ordinarily speak of so many pounds of gun to one pound of shot. The weight of a 9-inch shot is about 92 pounds; the weight of an 8-inch shot is 64 pounds, or about as 2 is to 3, leaving out fractions. It is obvious, then, that if a vessel carries a given weight of metal, of 9-inch guns she could carry in the proportion of but two, while of 8-inch guns she could carry three. Then, in consequence of the greater lightness of the 8-inch gun itself, and of all its equipments and ammunition—a lighter gun, a lighter sponge and rammer, a lighter shot and a lighter cartridge—the one shot being 60 pounds and handled with comparative facility by a strong man, and the other being 90 pounds and handled with great difficulty, the 8-inch gun would fire somewhat faster than the 9-inch gun. Let it be supposed that the three 8-inch guns fire five times each, while the two 9-inch guns fire four times each; then the proportions of shots which would be delivered by the two classes of guns would be as 8 to 15. Now I do not know a person who would not rather take his chances to receive eight shot from a 9-inch gun, than fifteen from an 8-inch gun.

Question. But if they should get a poke from your 15-inch gun you would demoralize the whole crew?

Answer. You cannot carry batteries of the 15-inch gun in broadside vessels; it can only be carried on the monitor class, and for this reason: a man carries more on his shoulder than he will in his extended hand. In the monitor the weight is supported by the whole strength of the boat; when in broadside it has a leverage. You carry a gun out on the side of the vessel and it pries on the keel or back-bone of the ship, and tends, to a certain extent, to break the vessel apart. In the other case the weight is supported on the keel, which they make as strong as they please by seven and sometimes nine strips, or keelsons, as they call them, supported by the whole column of water united under the whole vessel, and not merely by the film of water, as you may say, out on the side. Now, too, if you take two weights and put them in the scales of a balance and oscillate them, you will find that they move with a certain degree of force; remove those weights and put them over the centre, and the thing will oscillate with a very different force. The reason is well understood; there is less momentum in the one case than in the other.

Question. Then is it your opinion, in short, that lighter batteries are the best?

Answer. No, sir; not that. My opinion is that circumstances alter cases; that, for certain purposes, I would use the heaviest guns that can be made; for certain other purposes I would generally use lighter batteries than those now employed in our ships—lighter in individual guns, but amounting to the same weight of metal, and throwing the same weight of shot as at present. But, for particular cases, such as in the monitor class, which carry central turrets and can carry heavier guns, and as against iron-clads, I would use only the heaviest gun that I could get.

Question. You are acquainted, undoubtedly, from your study of the subject—for I perceive you have made it a study—with the guns of other nations than ours. In short, what gun, in your judgment, is best on shipboard? I see you would use different guns for different purposes. But, has any nation got a gun superior to ours, that you know of?

Answer. I think that no nation casts such good guns as ours. I think, however, that the broadside batteries of England and France, in wooden ships and against wooden ships, are far more formidable than our pivot batteries.

Question. Are they more formidable than our broadside guns?

Answer. No, sir; because our broadside guns are the same. But we cannot use our heaviest guns in broadside.

Question. Because they strain the ship too much ?

Answer. Yes, sir.

Question. The pivot gun may be used near the centre ?

Answer. They are pivoted to carry in the centre ; but when you want to use a pivot gun you use it on either side, running it out to its place with one or two reaches. It is pivoted in the centre, and the carriage may be made long enough to go from the centre out to the proper place at the side, so that you pivot it with one motion. But, with a very large vessel, more than one pivoting is often necessary. And I object to pivot guns because the weight of the battery, as carried on one side, brings the vessel very much down in the water ; and then, having pivoted your guns on one side, the other side is entirely unarmed ; and any quick ship, finding that you have all your guns pivoted on one side, by running to the side that is unarmed, will, for a part of the time, have an opportunity to fight you without your having any means to defend yourself, and exposing you to all the demoralization consequent upon such a situation. Besides, if one shot from the enemy pierces near your water-line, you cannot afterwards pivot your guns to that side without danger of filling with water. Then, after you pivot the guns on one side, and thus get your vessel down, it is difficult to get them up hill to pivot them on the other side.

Question. Do England and France use these pivot guns ?

Answer. Not so extensively ; not mainly, as we do in many of our vessels. I think that is a mistake on our part. Dahlgren, I believe, does not think so. It is a matter of opinion.

Question. And you think that no nation has more formidable guns than we have ?

Answer. Our guns themselves, I believe, are the best in the world. We only use the Rodman principle, which, I think, is the strongest manner of making guns. But gun-making is not my speciality.

Question. But gun-using is ?

Answer. My information leads me to believe that our guns stand better tests than theirs ; I think our modes of testing are more refined than theirs ; and, in a word, our guns are better.

Question. What was the effect of the enemy's shot upon our monitors in Charleston harbor ? They are a new thing, and there has been some controversy as to what extent our monitors were injured in that fight.

Answer. The question of the extent to which they were injured, whether much or little, will be answered according to your point of view. You get a patent arm, and go out with it to fight for your life. You find, after you have fired a few times, that the gun will not go off. After the action you bring it back to the gun-maker, and say to him : " I don't like this gun ; it don't go off." He looks at it, and says : " It is a mere nothing ; it is only this little screw. I will fix it for you in a moment." Now, it is a very little matter in the gun-maker's opinion ; but to you, who are fighting for your life, it is quite an important affair. Now, the mechanic may say that these vessels received very little damage ; the man who had to take them into action might think the damage great. There are two points of view : the one, a mechanical point of view ; the other, a point of view as to their ability to continue fire.

Question. I take it for granted that when a ship is rendered useless to annoy the enemy it is injured ?

Answer. There were four monitors out of seven more or less injured. In two of them, I think, the port stopper—ball stopper—was jammed while closed, so that a gun in each of them could not be used at all ; and in two of them the turrets were more or less jammed. There were very good reasons for thinking these monitors, which were injured, inefficient, or *hors du combat*, after that action. It may be found that the remedies which they have applied to obviate those difficulties have obviated them.

Question. Then they have endeavored to do that?

Answer. They have endeavored to do that. For instance, they have put on a heavy rim of iron in places that were beat in, and certain points of weakness have been strengthened. I suppose it is a subject which engages a great deal of the thought of the country; it surely costs a great deal of money, making iron-clads. And the relative merits of monitors and of vessels of the Ironsides class, or the Warrior class, has been the subject of a great deal of attention. England and France have gone in for the Warrior class; we, in this country, have principally gone in for the Monitor class.

Question. Which do you prefer?

Answer. I was going on to state. The Monitor class has, say twenty inches of surface, above water, to be plated. The Warrior class has, say twenty feet of surface to be plated. Now, with equal hulls to bear the weight, it is obvious that you might make the monitor class twelve times thicker than the Warrior class; or, more exactly, the increased thickness would be proportionate to the diminished surface. As you make the surface to be plated less, having the same hull to bear up the weight, the thickness may be greater. In other words, having the least possible surface to plate in the monitor, you may make the impenetrability the greatest possible; and because you have a central turret, supported from the keel, and nearer the centre of motion, you may carry a heavier gun there than it is possible to carry in broadsides.

The Monitor class, then, will have greater impenetrability and heavier ordnance; and, other things being equal, hull and speed, if you have developed in each class of vessels their utmost strength, the Monitor class will take the Warrior class.

Question. Can you give the monitors as much speed, and will they be as good sea-going vessels as the others?

Answer. The other vessels have their particular advantages. They have a better battery for ordinary battering purposes; are far more formidable against ports; will probably be found to be more healthy, and will probably be able to endure the sea longer. And for certain purposes the Warrior class of vessels are much the best. But when you come to measure the two vessels, the one against the other, then the Monitor class will take the Warrior class; and possibly, as fighting ports may be considered the exceptional case, and fighting ships the regular one, the Monitor class may be considered the more formidable vessel for navy service.

Question. But suppose you cannot get the same speed on the monitor; would not that be a great defect?

Answer. Yes, sir, that would be a great defect. But I do not know how far that difference of speed is inherent; I do know that the raft, the over-hang, of the monitor is a very great drag; but I think that that, to a very great degree, can be obviated. But it is plain enough, as you will see, that the monitor, with its less surface to plate, and consequently thicker plating, with its central turret carrying heavier guns, and throwing heavier shot, must, with other things equal, overpower the Warrior class.

Question. Is it your opinion that the monitor will ever be a sea-going craft?

Answer. Yes, sir. However, that depends upon what you mean.

Question. I mean could it go to the West India islands or to Europe?

Answer. This is inherent in the monitor: that, built near the surface of the water, at-sea the water will wash over the decks, and the people will be forced mainly to live below, with all the consequent disadvantages. But I have no doubt at all of their entire safety in a gale of wind if they are strongly built. Everything that is lighter than water will float upon it at the top. A cake of ice, which is about the same specific gravity of the monitors, with as much floating above as below the surface, as it comes down from the Arctic seas, is overwhelmed by waves which pass entirely over it; but submerge it as deep as

you may, being lighter than water, it continues to come to the top, until finally it is dissolved. A raft, as the waves dash over it, comes up again on top of the water. When I was making my first trip in the Weehawken I perceived, from my previous experience, that she would be very much covered up by the waves; but I said: There is no harm in that, because she is bound to come up; it would be a miracle if she did not.

Question. But in the mean time the crew must have some breathing place?

Answer. Undoubtedly; and if the vessel leaks more than the pumps will throw out, then it is clear enough that she will go down, and so would any other vessel. But as she starts out lighter than the sea, she is going to remain on top until water enough is added to make her heavier than the sea; and, therefore, so long as you can keep the water out of the monitor, she must float through any hurricane that ever blew. The problem is to devise such pumps and such tightness that the water in her shall not increase faster than you can throw it out. In regard to the monitors which have sunk, especially the old monitor, the water came in too fast, and down she went; and I think that in the old monitor the over-hang broke apart from the hull.

Question. Is not there a tremendous strain on that projection, and can you really overcome it, and make the vessel strong enough?

Answer. That is a problem which the sea and engineers have to solve. It is a very great strain. Mr. Stevens, an eminent English engineer, tested the percussive force of the sea, and found, by means of a dianometer, that it was about 6,000 pounds to the square foot. The dianometer is an instrument which may be seen in museums and other places, which a man strikes to determine the force of his blow, with the means of registering the degree to which the spring is driven back. Three tons to the square foot is a very heavy strain. That, however, was on an island, where the breakers rolled up, and where the force was much greater than would ever be found in the open sea. It was a moving wave, instead of a mere undulation.

Question. Is it your opinion that these heavily armored iron-clads will be safe sea-boats with which to cross the Atlantic?

Answer. You want to attain a given object, and you wish men and money to attain it. If I were the government, in a grave resort I would send iron-clads across the Atlantic without hesitation. Precisely as when you make an attack you expect to lose some men: here you have a certain prospect, if you get to the scene of action; if you do not get there, it is the fortune of war. I do not see any difference. I do not think it likely that it will ever be necessary to send such vessels across. I would only do it in grave emergencies; because, as far as public opinion has gone, it has established that they are not as good sea-boats as wooden vessels. Still I have seen times when an ordinary sail-boat, or even a skiff, except from starvation that would ensue, might have gone safely across the Atlantic. That occurs, probably, for some little time nearly every year.

Question. But you would not say it was a proper craft to undertake such a voyage?

Answer. Certainly not; but the Dictator monitor would offer great temptation to try. I think she would take the Warrior, Gloire, and Black Prince all together. In other words, the Dictator would be impenetrable to their shot, while each of her shot would make a hole through either of them. But none of the monitors now in use carry coal enough to cross the Atlantic.

Question. Her efficiency, at the same time, would depend very much upon her speed, would it not? If they could run two miles to her one, they could choose their own distance.

Answer. The Dictator, it may be safely presumed, would be faster than either of those vessels, because her horse power is excessive. Ordinarily two horse power to three tons is considered a large allowance. That is quite as much, I believe, as the Collins line of steamers had; quite as much as the Canarders

have; and the North river steamboats have somewhere about that. The Dictator has five horse power to three tons. What that will do on this particular craft remains to be seen.

Question. Will the Dictator carry more than two guns?

Answer. Only two. She has so much machinery, and is so much given up to horse power, that little room remains for guns. But it may be presumed that she has attained higher speed than the other vessels. If she has, her guns will pierce their sides, while their guns will not pierce hers.

Question. Do you know how many shots were fired from these large guns, say the 15-inch guns, in that attack upon Charleston?

Answer. I have seen the number stated; I think it was not far from sixty.

Question. In all your experience with these guns, have you known any of them to be disabled—I mean by the charge, not by the enemy?

Answer. No, sir; the charge used there was light. Subsequent experiments in battery here establish that much heavier charges can safely be used than those which have been employed in service.

Question. On the whole, if I have understood you correctly, we are now arming our sea-craft with guns of a heavy calibre; and you would rather have it more distributed?

Answer. I think so. But there is now a move in the other direction. The opinion of many officers since the war has begun to set very strongly in favor of broadside batteries instead of pivot batteries, and, as I said, the bureau is coming into that view to a considerable extent, and modifying the batteries accordingly.

Question. We were directed to inquire principally about the efficiency and usefulness of these guns. The Parrott gun you have not said so much about, I believe. Do you use that gun very much on board ships?

Answer. Yes, sir, it is used quite extensively.

Question. What do you say of the Parrott gun as a useful and durable gun?

Answer. I think it is useful and durable; but, as I said before, I think that for general services the smooth-bore is preferable, and for the reasons I have given: that is, greater accuracy of fire at any close distance, in consequence of the shot not being deflected upon the ricochet; greater simplicity, and consequently greater number of shots fired; and more formidable results, on account of the larger hole.

Question. It is your opinion, then, if I gather your idea, that the Parrott gun is better adapted to land service, and the smooth-bore to sea service?

Answer. I mean to say that every ship should have some few rifled guns, to be used in occasional cases. The long shots ordinarily are not worth their powder; they amount to little. The long shot on shore, where you can see whether the shot falls short or goes over, and you can correct your range by elevation or depression, is of more value; but you cannot do that at sea, on account of the motion of the vessel.

Question. Therefore, I supposed that your idea was, that because the ship had a motion that prevented the accuracy that can be obtained on the land, you think the Parrott gun is better adapted to the service on land.

Answer. Many of the artillery officers, I believe, prefer to use the smooth-bore, on account of its greater simplicity, greater rapidity of fire, and a larger shell; therefore, it must be put down, as a general rule, that each gun is best under some peculiar circumstances. But, as a general rule, the smooth-bore is the preferable gun on board ships. In the case of two frigates, the one armed with rifles and the other armed with smooth-bores, I should consider that the one armed with smooth-bores the more formidable vessel.

Question. Is it your opinion that General Gillmore, from the positions he attained in the harbor of Charleston, could have reached and destroyed Sumter with smooth-bores?

Answer. I think not. My opinion is based solely upon what the engineers say, who have a thousand sieges recorded, in which the distance of effective fire is accurately measured, and who would tell you to a very few yards what was the effective distance. They all state that Sumter was safe from any fire from smooth-bores. Of course, they had reference to ordinary siege guns. What the larger guns would have done can only be determined by trial. And, indeed, engineering, and all knowledge of artillery, is now in a kind of transition state. We have not had a sufficient number of experiments with these guns for men to form accurate conclusions; and consequently the opinions of different men vary. Up to the last few years, if you take artillery men, there was no difference of opinion in any sound people, because so many accurate experiments are recorded of sieges where feet are measured, and all the incidents known, that they were able to tell you how long it would take to capture any given place. At the siege of Antwerp, the French general said exactly how many days it would take him to capture the place, which was one of the strongest fortifications in Europe. And he actually did it on the very day which he had predicted. They can tell you how many men it will take to capture a place, and how many men will be lost. In making this parallel, for instance, at such a distance, they find from the comparison of so many sieges that a certain number of men will be lost, and so on.

But all that is now changed, because things are in a transition state, in consequence of this new artillery which has lately been introduced into service, and scarcely used at all in Europe. Indeed, they do not have these large guns in Europe.

Question. It is your opinion that we are improving in our artillery over the old method that you have been speaking of?

Answer. Undoubtedly; it is an advance, that a 15-inch gun made such a hole in the Atlanta and produced an effect different and greater than any known before.

Question. If the French general had had guns of our calibre and effect, he would probably have taken Antwerp quicker than he did?

Answer. They have fine roads and great means of transportation there. But it may be doubted whether carrying very heavy guns is practicable, for you have to consider the difficulty of getting them into position. Where you have motor transportation it is another affair.

By Mr. Loan :

Question. I wish to see if I have understood you correctly when speaking of the Warrior and ships of that class. You have stated that they have superior battering powers over the monitors.

Answer. I meant by that to refer to the larger number of guns that they have; not that each gun was more formidable. For reasons that I have already stated, while the individual guns are not so large as the 15-inch guns, they have more manageable guns, for they cannot carry such large guns in battery.

Question. I understood you to say, speaking in regard to forts, that they had superior battering capacity; by which I understood that they would knock down a fort quicker than a monitor would.

Answer. I can say what people report in relation to fighting duels. A man who ordinarily can knock spots out of a card, when he has another man standing up before him with a pistol in his hands, cannot shoot so accurately; and I have observed several times that the enemy begin to shoot wildly when we begin to shoot at them. In the monitor class the firing is exceedingly slow. They see you turn the turret; they see the ports open, and when you fire the people have gone, and you do not demoralize the men at all. But with this heavy broadside, men do become demoralized. I saw the terrible effect of the Wabash battery at Port Royal; it was so rapid in its fire that the rebels on

shore reported in their papers that the Wabash was twice on fire; it was merely the flames coming out from her batteries. I took a powerful spyglass at the time and looked through it, and saw the shells falling at a rate that perfectly astonished me; so that nothing could live there. The men were driven away from their guns. Now, if the Wabash had had a slow fire, she might have been destroyed, even if she had fired a 10,000-pound shot.

Question. The fire of those broadside batteries is more effective when directed against masses of men?

Answer. Yes, sir; but when you want to destroy a single ship, you must use such guns as will be most effective. Each gun of the Warrior is a terrible gun, but will not pierce the Dictator; while the guns of the Dictator will pierce the sides of any ship of the Warrior class.

Question. If I understand you, the increased thickness of plating on the monitor does not increase the weight any, it being only the same weight over a smaller surface. Why is it, then, that the Warrior possesses greater speed and sea-going qualities?

Answer. Because the overhang of the monitor, or the raft, meets with much greater resistance from the water than its mere cross-section would indicate.

Question. The effect produced by the wind is avoided by cutting down the vessel. Does that in any way compensate for the overhang?

Answer. It does not compensate in regard to speed, or it has not yet. The monitors have all been slower than their calculated speed. The slip of the screw is excessive, arising, of course, from excessive resistance; and as the model of an ordinary hull beneath the water is perfectly well known, and its resistance thoroughly established by very many experiments accurately recorded, it is obvious that the excess is due to the overhang or unrecorded addition. Why that should be so, we do not exactly know; but the fact has been found in a great many cases.

By Mr. Gooch:

Question. What is the reason that our navy does not now, or has not heretofore operated actively against the city of Charleston?

Answer. I do not know the reasons why they have not. I know the reasons which would operate with me if I were commander. They may have acted upon different reasons. Ordinarily and popularly to take a place means to take its defences. General Gillmore was forty-eight days on Morris's island acting against Fort Wagner, with some 10,000 or 12,000 men against a garrison of about 1,500, more or less, assisted by the monitors and by artillery which excited the wonder of Europe. After forty-eight days he took the place, not by his artillery nor by monitors, but by making military approaches and threatening to cut off their means of escape and take the place by assault. And when he took it it was not so greatly damaged as to be untenable. Now, if General Gillmore on the same island, assisted by his artillery and the whole force of the monitors, in forty-eight days, could not capture Fort Wagner by them alone, it is perfectly certain that the monitors alone never can take the much stronger defences which line James's island and Sullivan's island. In going up to Charleston, therefore, he would have to run by the defences and leave the harbor, so as far as they constitute the command of it, in the power of the enemy; and when he got up to the city he could not spare a single man from his monitors, even if they should consent to receive him. And if he burned the town, he would burn it over the heads of non-combatant women and children, while the men who defend it are away in the forts. I should be reluctant to burn a house over a woman's and child's head because her husband defied me. Dahlgren, if he burns Charleston, will be called a savage by all Europe; and after the heat of combat is over, he will be called a savage by our own people. But there are obstructions in the way which render it doubtful whether he can get

there. And if he goes up under the guns of those fortifications, sticks upon the obstructions, and is finally driven off by any cause, leaving one or two of his monitors there within their power, they will get them off, repair them, and send them out to what part of the coast they please, and give a new character to the war. The wooden blockade will be mainly at an end; unlimited cotton going out, and unlimited supplies coming in. I see no good to compensate for that risk, except it be in satisfying the national mind that retributive justice has been done against the city of Charleston—the nursery of the rebellion. He might possibly go up there and burn the town, in which there are no combatants, and a place which, in a purely military point of view, as far as I know, possesses no value. To do that he risks losing vessels upon the obstructions; and if they should be so lost and fall into the enemy's hands, a new phase will be given to the war. In a word, I do not think the game is worth the candle. Whether these reasons operate with him I do not know; they would with me.

Question. Do not the same objections obtain to General Gillmore shelling the city as do to the navy doing it?

Answer. I think so.

Question. Is General Gillmore now making any progress in the destruction of the defences of Charleston beyond what they are repaired by increased fortifications?

Answer. I presume not. I presume the defences of Charleston are growing stronger every day.

Question. Then is it not a useless contest on our part?

Answer. No, sir; we have the wolf by the ears, and we can neither hold on to him nor let him go without great inconvenience. You have stopped blockade-running, and I presume it is expected abroad that you must hold on to what we have. If General Gillmore should leave, it would, to a certain extent, be interpreted into a reverse.

Question. Cannot the navy stop the blockade-running without the army?

Answer. The two play into each other's hands, though it is difficult to estimate the degree. But it is obvious that the army cannot stay there without the navy, because the iron-clads of the enemy come out and cut off the supplies of our army, and it would either have to starve or get out. The army, therefore, needs the navy, and the army is convenient to the navy. The army prevents the occupation of the sand-hills on Morris's island, on which, otherwise, the enemy would erect very heavy batteries, of course, and be unseen until they were unmasked, which would render it impossible for our vessels to lie inside; so that if you withdraw either arm, you must take off both, and then resort to the previous outside blockade.

Question. Can the outside blockade be made effective?

Answer. Not so effective. The blockade now, however, is mainly effective all over the coast, as the price of foreign articles of luxury and necessity in the Confederate States goes to prove. It is obvious that a steamer or two entering their ports, so far from serving any useful purpose of allaying their wants, only keeps up the starvation, as it were.

Question. Do you see any prospect of a success on our part in our operations against Charleston and its defences, with the army and navy as they now are, or as it is proposed they shall be?

Answer. It is obvious that Charleston may be taken by force enough. But we must get our right arm free elsewhere before we can employ it there. The need is more troops. Now that is a point which we can very well afford to wait for, and for which the country is in no great hurry. There are other points—the army of the Potomac and Grant's army—which, I should think, are far more important; and I presume that we cannot send General Gillmore more troops, as that point can wait, and they would rather take the men that can be spared and send them to places where they fancy they are more needed.

Question. Have you any opinion of the number of troops it would require to take Charleston?

Answer. No, sir; for this reason—that there are a certain number of troops now in Charleston, and when we get a greater number of troops before it they will also have more there. It depends upon their power at a given moment to concentrate troops there to meet our increased force. When I was there they said that they could get in a short time between 40,000 and 50,000 men in Charleston; that is, they would summon by telegraph all the troops from Savannah and places in the vicinity within a day's reach of the railroad, and while Gillmore had about 12,000 available men, these 40,000 or 50,000 troops would be opposed to him in elaborate and skilful fortifications.

Question. If Charleston is taken, will it be taken by operations in the direction in which they are now being made by General Gillmore?

Answer. That is a matter on which I am not competent to give an opinion. It involves the studying of the various lines of approach, with accurate maps, and belongs rather to the army than to the navy. But if I had the requisite force I certainly would not, with my present views, go up in front of those batteries; I would go around them. I think the rear of the town is not defended as the front is, because all the menace has been from the front.

Question. Can the monitors as at present constructed carry sufficient coal to go across the ocean?

Answer. No; not as at present constructed.

Testimony of Mr. Charles Knap.

WASHINGTON, February 4, 1864.

MR. CHARLES KNAP sworn and examined.

By the chairman:

Question. The Senate have instructed us to inquire as to the efficiency of our heavy ordnance. What do you say in regard to the heavy ordnance we are now manufacturing, as regards its efficiency, durability and usefulness?

Answer. I cannot answer that question directly, perhaps, but I can answer it generally. I am proprietor of the Fort Pitt foundry, Pittsburg. I made the first of those heavy guns, and have continued to make them since, and am still employed exclusively in that business.

Question. On what principle are you making those guns?

Answer. On the principle called the Rodman principle.

Question. Will you explain the mode of manufacture?

Answer. This whole question has been pretty thoroughly investigated, so far as regards the patent process, in the report of Messrs. Holt and Owen, and in my answer to it. As far as the other matter is concerned, I am ready to answer any question you may put in regard to the durability of the gun, &c. I think there is plenty of evidence to show the superiority of the gun.

Question. How does the mode of constructing this gun differ from other modes of manufacturing guns?

Answer. Ordinarily cannon are cast solid and then bored out. The Rodman patent is for casting them upon a hollow core. The core barrel, as we call it, is, as you may say, a water-pipe, in which is inserted a pipe, generally of copper, running down to within a few inches of the bottom, down through which water flows, rising up outside of the copper pipe to the top, and then running out, and we keep up a fire outside of the casting. In other words, it cools from the interior instead of the exterior.

Question. And which, according to the results of experiments, gives greater strength to the metal?

Answer. Yes, sir. According to all the experiments of the government and of myself, it is very decidedly superior. Here is a table showing very exactly

what the superiority is, the actual results of experiments, and the percentage of superiority.

The trial tests commenced in 1848, and continued to 1858; and the comparative results, with the superiority of the hollow over the solid-cast cannon, show the following percentage:

	Solid.	Hollow.	Percentage.
1848—8-inch columbiads.....	85 rounds;	251 rounds;	295
1851—8-inch columbiads.....	73 “	1, 500 “	1, 105
1851—10-inch columbiads.....	20 “	249 “	124
1856—10-inch columbiads.....	26 “	315 “	120
1857—10-inch columbiads.....	399 “	1, 600 “	401
1857—10-inch West Point.....	169 “	1, 600 “	903

Mean superiority in six pieces, 491 percentage. Additional to this, in three of the six cases, the hollow guns remained unruptured, and would, if carried to extremity, have increased this mean superiority largely. Total number of fires endured by six solid-cast cannon (all broken) 772. Total number of fires endured by six hollow-cast cannon (three unbroken) 5,515.

These are actual powder tests. Mechanical tests and powder tests do not invariably agree.

Question. What are the mechanical tests—the hydraulic, or water test?

Answer. Yes, sir, and the pulling the iron apart by strain, showing the tensile strength.

Question. Are those mechanical tests resorted to to try the strength of the guns?

Answer. We always do that to test the metal previous to using it, and as we go along. We never made a gun that we did not take a specimen out of it and test it. Relatively the mechanical test is a very good test.

Question. It does not agree with the powder test, you say?

Answer. Not entirely, for we sometimes get very superior mechanical tests, and very inferior powder tests; that is a matter of experience. I have been in that business twenty years, and we still keep up the tests; but we have to judge by our experience. I do not rely altogether on the results of tests.

Question. Has this Rodman principle of manufacture been patented?

Answer. Yes, sir.

Question. Is Rodman the discoverer and patentee?

Answer. Yes, sir. I say he is the discoverer, for I think he is. I know he is the patentee.

Question. How long has this method of manufacturing guns been in use?

Answer. The principle was announced to me in 1845 by Major Rodman, then Lieutenant Rodman. And after making experiments to satisfy myself of the value and practicability of the principle, I obtained letters-patent in his name in August, 1847.

Question. How long has the government been proving guns constructed on this principle?

Answer. Our first experiment, in which the government took any interest, was in 1848.

Question. About how many guns do you suppose you have manufactured on this principle?

Answer. So far as I have received any compensation from the government for them, up to January, 1861, I manufactured thirty-nine 8-inch columbiads.

Question. About how many have you manufactured since January, 1861, and what is the capacity of your establishment to manufacture guns?

Answer. We have made about thirty 8-inch columbiads, two hundred 10-inch, and one hundred and thirty 13-inch mortars. My capacity is two 10-inch or 8-inch guns per day, three 15-inch guns per week, and two 20-inch guns per month.

Question. Is this mode of manufacturing guns practiced in any other establishment than yours?

Answer. I have permitted the South Boston foundry to manufacture guns on this principle, and they have manufactured mortars, and 15-inch and some 10-inch columbiads, on this principle. Mr. Parrott, of the West Point foundry, who is manufacturing the so-called Parrott guns, for which he has a peculiar patent, when he came to manufacture his large calibres, desired to use this principle, and I have allowed him the privilege of using it in the manufacture of what is called the 200 and 300-pounders; when he gets up to that capacity he finds it desirable to manufacture them in this way.

Question. Are those the only establishments where this method is practiced?

Answer. I am quite sure they have made some in the Scott foundry, at Reading, Pennsylvania, though I have had no returns from there.

Question. What is the price of guns made on this principle, as compared with the price of guns manufactured on the old principle; or perhaps it would be the same to ask, What amount of "royalty" for the invention is added to the price of the gun?

Answer. The "royalty" added is one cent per pound. I would suggest that there is another question you might ask with pertinence. There is the Rodman and the Dahlgren gun, of very nearly the same calibres.

Question. Well, I will inquire the difference in cost between the Rodman and the Dahlgren guns of the same calibre, with the "royalty" included for the Rodman gun?

Answer. I will speak of the prices of 1861, before the war prices came on. The 9 and 11-inch Dahlgren guns cost about ten per cent. more than the 8 and 10-inch Rodman guns, with the "royalty" included.

Question. What causes that difference?

Answer. Dahlgren endeavored to reach the same result in a different way. In other words, he required the founders to cast his gun as nearly cylindrical as was possible—as large in the chase nearly as it was in the breech—in order to obtain equality in cooling. Then they had to put the gun in a lathe and turn off all this extra metal.

In 1847 or 1848 Commodore Morris invited the founders, then consisting of Mr. Alger, of Boston, Mr. Parrott, of West Point, Mr. Anderson, of Richmond, and myself, of Pittsburg, to meet him and decide upon what would be a fair price for these guns. We took the standard price of the old columbiad, six and a half cents per pound, as being a fair standard, and made our estimates so that we did not care whether we had an order from the War Office or from the navy; it was pecuniarily the same thing. The result was that the prices we decided upon for the Dahlgren guns, and which have been allowed ever since, were, I think, ten or fifteen per cent. more than the price for the Rodman columbiad, with the "royalty" added, owing to this great waste of metal in making the Dahlgren—not only the waste of the iron, but the additional cost of cutting it off after the gun was cast. There is very conclusive evidence everywhere that the Rodman is the better gun.

Question. How did the Dahlgren gun differ from the old army columbiad?

Answer. In its finished state?

Question. Yes, sir.

Answer. Not very materially on the exterior, with the exception of what was necessary in the cascable. All we want in the way of a cascable in the army gun is the means of elevating and depressing. The form of the Dahlgren gun is not very materially different from the others. There has been a controversy between Dahlgren and Rodman in regard to that; Dahlgren thought Rodman had stolen a little of his thunder. Interiorly the guns differ; Dahlgren's chambers have been different. Rodman has discarded chambers; he does not

have chambers. His bore is a regular straight bore, with a cylindrical or ellipsoidal end. I am persuaded that the chamber is mischievous.

Question. Is the price of these guns enhanced by the reason of their bigness or weight?

Answer. Yes, sir, very considerably.

Question. So that the heavier guns cost the most per pound?

Answer. Yes, sir.

Question. In what proportions?

Answer. We have the same price per pound for the 8 and 10-inch columbiads; those we do not consider differ materially. The difference between the 9 and 11-inch navy guns is about $1\frac{1}{2}$ cent per pound. When we get up to the larger calibres, say the 15-inch gun, then we increase the price per pound very materially.

Question. What are you receiving for the 15-inch guns from the government?

Answer. They weigh twenty-five tons, and we are getting \$6,500 each.

Question. I have understood that you are constructing a 20-inch gun on this Rodman principle?

Answer. Yes, sir.

Question. Has any gun ever before been cast in this country as large as that?

Answer. No, sir; nor anywhere else, except the bronze guns at the Dardanelles, that throw stones.

Question. How many of those guns are being constructed, so far as you know?

Answer. There is no order out but for the one. It is considered an experimental gun. Preparations have been made for it, and the day fixed for casting it.

Question. It is not already cast, then?

Answer. It is not cast. The metal is ready, and we will cast it next Wednesday.

Question. Do you know whether this principle of Rodman has been known or practiced in Europe?

Answer. It is known in Europe, but I do not believe it has been practiced there; certainly never before the invention here by Rodman. But the reports, which have been published by the Ordnance Office, of Wade and Rodman, have been seen in Europe, and the principle, of course, is known there. And we have had a great many European officers at the foundry witnessing the operation. But I do not think it has been practiced in Europe.

Question. All these large guns are smooth-bores, I suppose?

Answer. Not necessarily. In 1860 I made what is called the "Union" gun; a 15-inch gun exteriorly, bored to twelve inches and rifled; and I have recently made three navy 15-inch guns exteriorly, bored to twelve inches and rifled on the plans of different inventors, to show which method of rifling is the best.

Question. What does the rifling add to the cost of one of these guns?

Answer. I should say about \$200; perhaps a little more, but about that.

Question. In so large a gun as that will the projectiles take the grooves and have the rifle motion?

Answer. That is what we have just made those three guns for, in order to experiment upon them. I have always told them I did not believe in them; but I suggested, that where there were so many people determined they would have rifled guns, it would be an easy way to settle the matter to have guns made with different modes of rifling and different projectiles, and if they were valuable it would be a good thing for the government. I suggested that view, and the government is acting upon it now.

Question. You have been in the habit of casting guns on the old principle for a long time, I believe?

Answer. I commenced casting guns in 1842, and I have continued it ever since. I commenced casting them hollow in 1845, but not for the government until 1858 or 1859.

Question. Have you witnessed extensively the testing of these guns?

Answer. Yes, sir.

Question. Do you know much about the Parrott gun? Have you constructed any on that principle?

Answer. I have not constructed any. Mr. Parrott constructs all those guns himself.

Question. Do you understand his to be a patent gun?

Answer. He has patented the reinforce, which is a wrought-iron band, and the mode of putting it on; and I suppose some portions of his patent are valid.

Question. Do you know what "royalty" we pay for his patent?

Answer. I think none whatever, because he charges so much per gun.

Question. Which is the dearest gun to the government, the Rodman or the Parrott gun?

Answer. I furnish now the 8 and 10-inch guns— which are equal to the 200 and 300-pounder Parrotts—for 9½ cents per pound. I think Mr. Parrott's prices (he sells by the gun) would be 17 cents per pound.

Question. That is caused, in some measure, by this wrought-iron band?

Answer. The cost to the manufacturer is enhanced, of course, by that, for the wrought-iron band is very expensive; and, to say nothing of this patent, the band of itself, to make it and bore it out and shrink it on, is worth probably 25 cents a pound.

By Mr. Odell:

Question. What proportion of the Parrott gun is made up of wrought-iron?

Answer. I have no data with me.

Question. Give an approximate result.

Answer. I can give an approximate answer, but not an exact answer. I should say that fifteen per cent. of the weight of the gun is of wrought-iron; that is, the jacket increases the weight fifteen per cent.

By the chairman:

Question. And the rifling process adds something more to the cost of the gun over the smooth-bore?

Answer. Yes, sir; and that depends upon the size of the gun.

Question. You say that the government pays no "royalty;" but is it not manifest, from the price of the two guns, that the price to the government is enhanced by the patent of Mr. Parrott and his monopoly of it?

Answer. I do not know. For instance, Mr. Alger, of Boston, and the Scott foundry at Reading, charge no royalty to the government. They charge the same that I do, but they pay me. The government does not pay me any "royalty," and does not pay Mr. Alger or Mr. Parrott any "royalty." Mr. Parrott pays me a "royalty" on his 200 and 300-pounders.

Question. But the government pays that at last?

Answer. Certainly; that is an element of the cost of the gun. Really, so far as I know, the government pays no "royalty," as "royalty," for any cannon they purchase.

Question. But they pay an enhanced price for those guns in consequence of their being a patent, and of the patentee having a monopoly?

Answer. Yes, sir, so far as the 200 and 300-pounder Parrotts go, and so far as the 8 and 10-inch columbiads and the 15-inch navy go.

Question. And that enhancement of price, as I understand you, is about a cent a pound?

Answer. Yes, sir.

Question. What calibre of guns are you manufacturing now, principally?

Answer. The last report from the foundry is, 7 9-inch navy, 6 10-inch army, 3 11-inch navy, $1\frac{1}{2}$ 15-inch army, and $1\frac{1}{2}$ 15-inch navy, per week.

Question. You have known a great deal about guns, and I perceive that your mind and attention has been turned to that subject for a great many years past. Do you know of any guns of any other nation that you have reason to believe to be superior to our Parrott gun, or to our Rodman columbiad?

Answer. No, sir; not on the face of the earth.

Question. Have you ever tried to manufacture the Armstrong gun?

Answer. No, sir.

Question. You have seen it?

Answer. Yes, sir.

Question. What is your opinion of it?

Answer. It is a very good gun, but excessively expensive, and not very durable.

Question. Do you consider it any better than our first-class guns?

Answer. I would ask you what you mean by "better."

Question. I mean in point of strength, efficiency, and durability.

Answer. They do not compare with ours; of course, cost is an element.

Question. Not exactly; I want to know, regardless of cost.

Answer. Well, sir, I do not think any of their guns are better, so far as regards strength, durability, and efficiency.

Question. If it was thought best to do so, could you, at your establishment, manufacture the Armstrong or the Whitworth gun?

Answer. No, sir; they are wrought-iron guns, and I confine my manufacture to cast-iron. I could not make them with my present means of manufacture.

Question. They could be made in this country?

Answer. Certainly. Did you ever hear of a Yankee that could not make anything that anybody else could?

Questions. What do you say about the Whitworth gun?

Answer. As a toy it is the most wonderful gun in the world, but it is not fit for actual service, for it requires such accuracy and delicacy of construction. The bore is an octagon, and it has an octagonal projectile, and it requires very delicate manipulation, and common soldiers in action are not very delicate fellows in handling their projectiles, and those guns would be very apt to jam. Mr. Whitworth himself, so far as I have seen, has got the best results we have ever had. It is a perfect thing to show the state of the art, but for actual service, in my opinion, it is not worth carrying into the field.

Question. Do you know anything about the Ames wrought-iron gun?

Answer. I have heard of the gun, but I do not know anything about its structure or capacity.

Question. Is there anything further that you would desire to state in reference to this inquiry?

Answer. I would say, as my opinion as a manufacturer, and from my examination of these guns, that there is not known any method of procuring the same efficiency at the same cost and the same risk to life of your own men as the heavy ordnance cast upon the Rodman principle. You may take a cast-iron gun or wrought-iron gun, or anything else of very heavy calibre, and I will be willing to hang my gun alongside of it, and let them be fired, and if mine fails before the others do I will give up; while the cost of my gun will be 25 per cent. less than the wrought-iron.

Question. How small a gun are you manufacturing on this Rodman principle? I suppose that when the gun is very small you do not make it on this principle?

Answer. We are not manufacturing less than 8-inch calibre on this principle.

It might be valuable for the 6-inch gun, or what is known as the 32-pounder; but in fact the government does not order any 32-pounders now.

By Mr. Loan :

Question. In regard to this "royalty" that is spoken of, as I understand, you are the sole proprietor of the Rodman patent, as it is called?

Answer. Yes, sir, I am the proprietor of the patent; Rodman shares in the prosperity of the patent.

Question. What is the percentage that he receives?

Answer. The original agreement was that he should receive one-half; I was to have one-half for conducting the original experiments and getting the patent. That proportion still holds good, but, as you will find from the documents, I have a transfer of the whole patent from him.

Question. I understand, then, that you have the legal right to the patent?

Answer. Yes, sir; but he has one-half of the profits of the patent.

Question. That is, his beneficiary interest in it is equivalent to one-half the profits received?

Answer. Yes, sir.

By the chairman :

Question. If Major Rodman was an officer of the government at the time he made this discovery, why is a "royalty" charged to the government, or what is equivalent to it?

Answer. Captain Rodman disclosed his invention to the ordnance department of the government—that is, his idea of the matter—and solicited their aid in testing the practicability of it, and offered to give the government the benefit of his invention. Colonel Bomford and Colonel Talcott, the one the head and the other the assistant of the Ordnance Bureau, declined to give the aid of the government to testing the theory—not simply because there was no available money, but because they regarded the proposed new mode of casting hazardous, impracticable and valueless. I then took the matter up, and agreed to carry out all the experiments and develop it at my own cost, if I was allowed the one-half interest, and if it was found to be a valuable invention.

Question. It was, therefore, tested at private expense, and without cost to the government?

Answer. Yes, sir; the practicability of the invention was tested at private expense. The government, however, has since experimented with it at its own expense.

Testimony of Rear-Admiral Samuel F. DuPont.

WASHINGTON, *February 5, 1864.*

Rear-Admiral SAMUEL F. DUPONT sworn and examined.

By the chairman :

Question. What is your position in the navy of the United States?

Answer. I am a rear-admiral.

Question. Where have you served in this war, and in what actions have you been engaged?

Answer. I first served in command of the Philadelphia navy yard, and then in command of the South Atlantic blockading squadron, its station comprising the coasts of South Carolina, Georgia, and East Florida to Cape Carnaveral. In reference to the actions in which I have been engaged, I commanded at the capture of the Port Royal forts and the taking possession of Fort Clinch and Fernandina, Fort Marion, and St. Augustine, and other ports and inland waters of those coasts; I also commanded at the attack on the defences of Charleston on the 7th of April, 1863.

Question. What kinds of guns were used in the actions in which you were engaged?

Answer. At Port Royal the 8, 9, 10, and 11-inch smooth-bore guns, the three last known as the Dahlgren gun, with a few of smaller calibre.

(The resolution of the Senate of January 25, 1864, was read to the witness.)

Question. Have you any knowledge of the gun called the Rodman gun?

Answer. I know the 15-inch gun of the navy, so far as it formed part of the armament of the iron-clad fleet under my command at the attack on Charleston of April 7, 1863.

Question. What do you say of the efficiency of that gun in actual service, especially against fortifications?

Answer. I think its initial velocity decidedly too low; that, so far as my experience goes, it requires to be very close to be effective.

Question. What amount of powder did you use in that 15-inch gun?

Answer. The charge was 35 pounds.

Question. Could you not increase the initial velocity by a larger charge of powder?

Answer. That would no doubt increase the velocity. I learn that experiments are now being made with increased charges, but I have not heard the results. The charge of 35 pounds was very effective in the action with the rebel iron-clad Atlanta, when the distance was short; yet, short as it was, the ball did not penetrate, though producing great results which led to her capture.

Question. Is this 35 pounds what is called a service charge?

Answer. Yes, sir, that is what we then used as directed.

Question. Unless you could use safely more powder in that gun, what would you say as regards its efficiency?

Answer. It would be deficient in range, though it might be very effective against wooden vessels and iron-clads at short distances.

Question. What would be its effective range with 35 pounds of powder?

Answer. As I have already stated, it was very effective in the action with the Atlanta, at a distance of about 350 yards. In the action at Charleston, it was generally estimated that the distance at which the monitors were engaged was from 700 to 750 yards.

Question. What did you observe of the efficiency of the gun at that distance?

Answer. I was entirely disappointed in its destructive effect.

Question. Was it more effective at that distance than the 11-inch gun, which I believe is the mate to it in the monitors?

Answer. I think it was not so effective as the 11-inch gun, and much slower in firing. It was difficult, of course, to judge accurately.

Question. What kind of a gun is that 11-inch gun?

Answer. It is well known as the Dahlgren gun, smooth-bore—it was placed on the new screw gunboats, and I had a high opinion of its effectiveness.

Question. Are those 11-inch guns made on this Rodman principle?

Answer. No, sir.

Question. Instead of being cast hollow, they are cast solid and bored out?

Answer. Yes, sir; while the Rodman gun is cast on a core and cooled from the inside.

Question. What is your opinion of the 15-inch gun? Would you prefer having on board ship guns of 15-inch calibre, or guns of a smaller calibre and more of them?

Answer. I think one of the defects of the 15-inch gun is its great weight, for it cannot be used as a broadside gun; while in the monitors in which they have been placed, carrying but the two guns, we lose rapidity and continuity of firing. I would not wish, however, to be understood as condemning this gun; there are positions where it may be used with advantage, on forts especially, and against iron-clads and wooden vessels. But the slowness in loading them, and the slowness of fire in consequence, is a great disadvantage afloat. To at-

tack forts—I do not mean to “run them”—you require great initial velocity and rapidity of fire.

Question. What would be your judgment, suppose you could use safely 60 pounds of powder, instead of 35 pounds, in the 15-inch gun?

Answer. I could not give a precise answer to this question, as I have stated before. I have not heard the results of the experiments that have been made, or are now in progress. I understand that 50 pounds of powder have been tried in the gun.

Question. Some witnesses have stated that 60 pounds of powder have been tried in the gun?

Answer. These charges, if considered in reference to the weight of shot, have been greatly reduced, and even sixty pounds is much below the old ratio. But what charge this gun will stand; what increase of initial velocity will be obtained, and whether the increased amount of powder will be burnt effectively, experiments alone can decide.

Question. You use a species of coarse powder for this gun?

Answer. Yes, sir; what is known at the navy ordnance bureau as No. 7.

Question. Do you use the same kind of powder on the 15-inch gun as in the 11-inch gun, on the monitors?

Answer. Yes, sir, we do on my station.

Question. Has that kind of powder lately come into use?

Answer. It is the same kind or quality of powder we have always had; the only change is in the size of the grain.

Question. Do you consider that an improvement on powder for those large guns?

Answer. I believe that No. 7 has been well tested by the ordnance officers of the navy, and found better for heavy ordnance than the smaller size, known as “navy cannon powder.” In the army what is known as the mammoth powder is used in the Rodman guns; and if I am not mistaken, the grain is six times the diameter of No. 7.

Question. If I understand you, it is your opinion that these monitors would be more effective with guns smaller than 15-inch, and more of them?

Answer. I have an impression that a 13-inch gun with a larger charge of powder would be a more effective gun. I think, besides, that the 15-inch gun does not suit the monitors as I saw them tested. When they approach forts close enough to render the 15-inch gun effective, then the vessels themselves are no longer invulnerable.

Question. Do you know whether any of these Rodman guns were injured in your attack on Charleston?

Answer. I believe not.

Question. They all stand the charges that were used in them?

Answer. I do not think any of the guns themselves were injured; some of the gun machinery suffered.

Question. I do not mean injured by the enemy, but by the charges used in them.

Answer. The guns themselves did not yield any; they were examined afterwards.

Question. What do you know of the Parrott guns? Have they been used on shipboard much?

Answer. Yes, sir; they have been gradually introduced as part of the battery of ships, latterly, I believe as fast as they could be procured from the foundry.

Question. Up to what size are they used on shipboard?

Answer. The largest is what we call the 150-pounder rifle; we had one or two of that size in the summer of 1862. In one of the monitors, only, a Parrott rifle was used in the place of the 11-inch gun. I have the highest opinion

of these Parrott guns, so far as I have had the opportunity of judging, though I have never witnessed any special experiments with them.

Question. Do you consider its range and efficiency to be greater than that of the Rodman smooth-bore?

Answer. Yes, sir, its range is decidedly greater; its relative efficacy would depend upon circumstances, such as distance, substance to be penetrated, &c. The ponderous effect of the 15-inch gun was exemplified in a wonderful manner in the action with the Atlanta, where the distance was very short; at long range the Parrott rifle would have greatly the advantage, as exemplified on Pulaski, and later on Sumter.

Question. What sized guns were used on shipboard in our own service previous to this rebellion?

Answer. Of the improved guns, what were known as the 8-inch, 9-inch, and 10-inch guns; the 9 and 10-inch were Dahlgren guns; the 8-inch was of a different form, but a very effective gun.

Question. Were the old guns effective in battle?

Answer. They were very effective, particularly in a relative point of view, for other navies had none better.

Question. From your knowledge of the Rodman and the Parrott guns as used on ship board and in battle, have you full confidence in them as effective weapons of warfare?

Answer. I have great confidence in the Parrott gun for particular purposes, as I have before mentioned. To the Rodman gun, or what is known in the navy as the 15-inch gun, I have stated some objections, that it cannot be used as a broadside gun; its initial velocity is too low, and it takes too long to load. Yet, as I have observed in replying to a previous question, this gun has also its sphere of action, such as against iron-clads at short distances, and I think it would prove especially effective on fortifications commanding channel-ways, particularly where the channel was near to the fort.

Question. You are of course well conversant with our fleet. Is the armament on board of it generally such as the profession approves?

Answer. The armament of our frigates I believe is generally approved. There are often differences of opinion between those who invent or make instruments and those who have to use them, but I think much has been done under the circumstances. The armament of the smaller vessels I learn is under discussion, and I believe some changes are now being made in conformity with the views of the profession.

Question. From all your knowledge upon the subject of heavy ordnance, have you reason to believe that the United States have as effective weapons of this kind as any other nation?

Answer. I think they have, on the whole; and I deem the inventive genius of the country in this line equal to any abroad. In reference to the proper distribution of these weapons, the number and the description of the guns to meet particular circumstances and emergencies, that should be placed on the different vessels of the navy, there may be differences of opinion. At one time in naval warfare, uniformity of calibre was deemed a great improvement; this is no longer so considered.

Question. What do you know of the English Armstrong and Whitworth guns?

Answer. I have seen them, but am not familiar with them, other than through the information that has been published. The Whitworth gun, with its steel-pointed shot, I think has good range and penetration. I am under the impression we were struck by some in Charleston harbor; but there is no certainty of this. The Armstrong gun has the objection of loading at the breech, which is a serious objection in my opinion.

Question. What was the effect of the enemy's fire upon the monitors in that action in Charleston harbor?

Answer. It was very severe, and produced effects I did not anticipate when I went into the action. The armor was broken and the wood-work laid bare; the turrets were prevented from turning, the decks were furrowed, and in one case entirely penetrated; five of the iron-clads, one them the Keokuk, were wholly disabled, and all the fleet injured more or less. The published reports of the commanding officers of the monitors show the extent of their injuries more fully and accurately than I have stated. It was the certainty of these injuries recurring again, and our very slow fire from the monitors and the defective range of the guns, causing an inability to injure seriously the batteries of the enemy, which induced me not to renew the attack, satisfying me that the defences of Charleston could not be overcome by a purely naval attack with the force under my command.

Question. For defensive purposes which would you prefer, an iron-clad on the principle of the Ironsides, or the monitor with a turret?

Answer. Each of these classes has its peculiar adaptation, and the service to be performed would decide the selection. The Ironsides is armored with solid plates, which I deem very superior in resistance. I believe no other kind have been used abroad except in experimental targets.

Question. Which would be most effective in an attack upon a fortification, a craft like the Ironsides, or one like the Monitor?

Answer. The Ironsides would be very preferable for that purpose, from having a broadside firing eight guns rapidly, instead of two guns slowly, like the monitors. It would take four monitors to equal her number of guns alone on one broadside, with the additional advantage of firing much more rapidly.

Question. When brought to the actual test of battle, did these monitors have the resistive power that they were supposed to have before they were put to the actual test?

Answer. No, sir; nothing like it. Yet, in comparison with wooden vessels, they might be called invulnerable. I had been impressed in their favor, and was disappointed at the extent of the injuries they received. The previous trials against Fort McAllister, on the Ogeechee, had already shown that their aggressive power was less than I anticipated as against forts. But it should be remembered that no vessels before had been under such a fire.

Question. Suppose a hundred-pound ball strikes the turret of one of these monitors; is it not likely to make such an indentation as to prevent its turning?

Answer. It is almost certain to do so if, coming with a full velocity, it strikes the hinge or junction with the deck or pilot-house. After the action of the 7th April, the turret of one of the monitors was not in the usual working order for nearly a month; not until the 5th of May could it be turned with less than thirty pounds of steam.

Question. How many monitors did you have engaged in that action?

Answer. Seven. The Ironsides and Keokuk were not monitors.

Question. Had you any means of knowing what impression you made upon Fort Sumter with your monitors?

Answer. I tried hard myself to discover what impression we had made before withdrawing, and I remember Captain Drayton telling me he had also looked earnestly with his glass from the Passaic for the same end. To both of us the fort had the appearance of having been pitted with small indentations. Afterwards, from the Morris island anchorage, on a clear day, I thought there was evidence of more injury; but Brigadier General Seymour, who was on board the Ironsides with a superior glass and practiced eye, assured me it was the effect of shadows. I obtained information a couple of months later, to which I gave some credit, that two shot had penetrated three feet into the masonry.

Question. Do you remember how many shot were thrown from the monitors during that engagement?

Answer. The whole number fired were only 139, if I remember right.

Question. At what distance were the monitors from the fort?

Answer. It is difficult to be accurate in estimating distances when you have no opportunity of using your instruments or measuring an angle. I think the commanding officers of the monitors generally reported the distance at from 700 to 750 yards. The Keokuk, which was of different construction, got in closer, I suppose within some 550 yards, but she was very soon disabled, and only had a chance to fire five times, was cut all to pieces at the water's edge, and sunk the next morning.

Question. What was the calibre of the guns of the enemy?

Answer. I cannot answer accurately. The officers measured various indentations; some of these measurements gave 8-inch rifled projectiles; this mode, however, is liable to error. One 7-inch projectile was picked up on the Ironsides. A large shell exploded amid the sand-bags which had been placed under the wooden ends of that ship. The enemy had heavy smooth-bore. I will take occasion to mention here that the monitors have their merit and special qualities, but, in my judgment, are not calculated to attack forts with success; and if a message which I received from Mr. Ericsson was correctly delivered immediately after the attack on Charleston, he did not expect them himself to withstand forts.

Question. What did he expect of them?

Answer. I could not say what his expectations were, further than above stated. My own opinion is, they might be important adjuncts to forts in a system of national defence, to cover and protect obstructions—to meet the iron-clads of an enemy if they attempted to enter our bays, rivers, and harbors.

Question. Can they be made sea-going craft?

Answer. No, sir; they are not so now—at least none that I had in my squadron—and the government has not chosen to risk them without a steamer to tow and to be at hand in case of accidents occurring to them.

Question. Must not that want of speed be an almost insuperable defect in them when they encounter vessels of greater speed, that can choose their own distance?

Answer. It is a very great defect; and in any encounter with vessels where there would be room to avail of superior speed it would be of the utmost importance. But all our iron-clads have so far proved slow. Some now building are expected to be faster.

Question. Iron-clads like the Ironsides have more speed and greater sea-going qualities than the monitors?

Answer. Yes, sir. If I remember right, she is about two knots faster than the monitors under steam. She is, moreover, fitted with masts and sails, behaves well at sea, and can take care of herself without a tow.

Question. And if I understand you, they are, in your opinion, the best form, all in all, of making armored vessels?

Answer. I prefer the Ironsides for certain purposes to the monitors; she carries a formidable broadside battery, but she also has great defects. This building an iron-clad navy I deem in its infancy, and we should go into it with caution. No one form or mode can be said to be superior to all others for *all* purposes; and as we should not confine ourselves to one kind of gun on shipboard, neither should we restrict ourselves to one form or class of iron-clads. The casemated vessels, with broadside guns, have their advantages. The sea-going iron-clad frigates of the French, such as the Solferino and Magenta, with batteries on two decks, and mounting fifty-two guns each, thirty of these rifled, and with great speed, have a still wider field; even the revolving turret has its sphere

and merit; though, as I have before stated, their limited number of guns gives them no telling effects against forts.

Question. And if the enemy gets one shot at them and stops the revolving of the turret, that stops their aggressive power?

Answer. Entirely. In two cases, also, we had the port-stopper, while closed, jammed in that position by a shot striking the turret, preventing any use whatever of the guns during the action.

Question. What are the difficulties in approaching the harbor of Charleston with a fleet, or what were they when you were there, besides the obstructions?

Answer. The obstructions brought us up, and confined the attack where I had not intended it to take place—that is, within the range of the greatest number of forts and guns that could be brought to bear upon the fleet; and the obstructions were placed by the enemy for this purpose. I think, and so did some of my commanding officers—I do not know but all of them did—that the fire alone of the batteries would have been sufficient to have kept out that small number of vessels which were being injured so rapidly. We had but thirty-two guns in all, and from this number we could not keep up that rapidity and continuity of fire which had proved so effective at Port Royal; causing little or no injury to the enemy, while receiving much damage ourselves. More recent events have thrown light upon this subject. Batteries of the most improved ordnance, assisted by the iron-clad fleet, failed to capture, for 48 days, 7 guns of the many hundreds we had to encounter on the 7th of April. And Fort Wagner only surrendered after a siege and regular approaches with an overwhelming number of troops as compared with the garrison ready to assault. I may add, that the disparity between forts and vessels is well established. With the new ordnance, and certain modifications, the former will maintain their supremacy in general.

Question. Do you know anything about the “royalty” paid by the government for the construction of these guns?

Answer. No, sir; I have not the slightest idea. I have no knowledge of the price paid for them. I would say here, that the machinery to work these guns gave way, while the guns themselves stood the test, and the only rifled gun we had broke down on the fifth fire.

Question. Did the gun itself give way?

Answer. No, sir, part of the machinery, the saddle which held the trunnions, and some cap square bolts.

Question. How heavy a rifled gun did you have?

Answer. We had only one, a 150-pounder rifled gun, on board the Patapsco, in lieu of the 11-inch gun.

Question. You have already said that you consider the Parrott rifled gun a very effective gun?

Answer. I think it a very effective gun; I like it very much, and the service of those guns on the land at Morris island has been a conclusive proof of their great superiority in range and effectiveness against forts at great distances. Of course, I do not mean that rifled cannon should be used exclusively on ship-board except in very special cases; where ships carry many guns the bulk of the battery should be smooth-bore.

Question. If I have understood you correctly, from all your knowledge and experience, you think our guns are such as you and the profession generally repose confidence in?

Answer. Entire confidence, with the exceptions before stated.

By Mr. Gooch :

Question. Had there been no obstructions in Charleston harbor, would there have been any difficulty in your going up to the city?

Answer. I have stated that the obstructions brought us up or stopped us. I

think, and so did some of my commanding officers, that the iron-clads were injured so rapidly, even without obstructions, we could not have reached Charleston by running the forts. As for capturing them or effectually silencing them, this could not be done, in my opinion. I have said in a previous part of this examination, when the monitors were carried close enough to make their 15-inch gun at all effective, the vessels themselves were no longer impenetrable; and when from any cause an iron-clad is detained under the guns of a fort, it became a target of iron instead of wood; and if prevented from using its own guns, it is a mere question of time—the shore batteries must prevail.

Question. Were the monitors kept in motion during the action?

Answer. They were moving steadily up until stopped by the obstructions; they then swung around and did the best they could from where they were against the forts. Finding they had made little or no impression, I made a signal late in the afternoon to withdraw, intending to renew the action next morning. Before making the signal, two of the monitors had to withdraw, being helpless, so far as their aggressive powers were concerned. Notwithstanding the exertions of a brave and skilful pilot, I could not place the Ironsides where I wanted her, and could not bring her battery to bear as I desired. She was, however, about one thousand yards from Sumter, and about nine hundred yards from Moultrie, and was struck 93 times.

Question. With how many of your monitors could you have renewed the engagement next morning?

Answer. There were two that were not so very much damaged. The others were wholly or partially disabled for the time; those which had to some extent repaired their injuries could have moved up, but under disadvantages and with a certainty of the immediate renewal of their injuries; these injuries were also of such a kind that if struck again anywhere in or near the same places the damage would have been infinitely greater than at first. For example, the turret and pilot-house of one of the monitors had over eighty bolts driven out or broken which could not be replaced, and the commanding officer was of opinion, officially expressed, that four more shots such as the pilot-house had received would have demolished it.

Question. Then you would have renewed the contest at a very great disadvantage?

Answer. Yes, sir; so great a disadvantage, with so little prospect of doing injury to the enemy, that I did not renew the attack as I intended doing until I had received the reports of the commanders of the extent of their damages; and I beg leave to add that my judgment has been borne out by subsequent events.

Testimony of Major T. J. Rodman.

WASHINGTON, February 6, 1864.

Major T. J. RODMAN sworn and examined.

By the chairman:

Question. What is your rank and position in the army?

Answer. I am what may be called an unconfirmed major. I have been nominated and passed examination, but have not been confirmed by the Senate.

Question. How long have you been connected with the army?

Answer. Since July 1, 1841.

Question. In what branch of the service have you been the most?

Answer. I have been in the ordnance department all the time.

Question. It has been said that you are the inventor of what is called the Rodman gun?

Answer. I believe myself to be so.

Question. About what time did you make that discovery?

Answer. In the latter part of the year 1844 and in 1845. If the committee desire, I will give a history of the invention.

Question. Do so, if you please.

Answer. My attention was first called to this matter by the bursting of the "Peace-maker," on board the Princeton.

Question. What was the calibre of that gun?

Answer. My recollection is that it was a 12-inch gun. I had been taught at West Point to stand by any cast-iron gun for 2,000 fires, and the idea of investigating the endurance of a gun never occurred to me until the bursting of that gun. My attention was then called to it.

Question. Where was that gun cast?

Answer. That was a wrought-iron gun, made in England, I believe.

Question. It was not a breech-loading gun?

Answer. No, sir; it was a muzzle-loader.

Question. I did not know that they had made any wrought-iron guns at that time, at least of that calibre?

Answer. Commodore Stockton, of the navy, had that gun made to arm his vessel, the Princeton.

Question. Was that gun made on the building-up principle, of concentric rings?

Answer. No, sir; my recollection is, that it was a solid forging, bored out.

Question. Do you remember the charge that burst that gun?

Answer. I did not remember what amount of powder was used. The shot would weigh about 216 pounds.

Question. Not so heavy as are fired now?

Answer. No, sir.

Question. Did you take a patent out for this; and what is the date of it?

Answer. I took out a patent, and, if you will allow me, I will state all the circumstances.

Question. I wish you would do so.

Answer. I was placed to superintend the manufacture of, I believe, 92 8-inch guns at Fort Pitt foundry, in the years 1845 and 1846, if I remember rightly. At that time, in consequence of the bursting of the "Peace-maker," I became interested in this subject, and paid more close attention to the manner of cooling, and from my observation on the appearance of the gun, and of the sinking head, seeing the metal come down, sometimes to the depth of ten or twelve inches, the metal torn and pulled away, it occurred to me that there was a wrong principle there. I then investigated the laws of the strain to which guns were subjected under fire, and I became satisfied the system was wrong.

I first proposed to make an iron, or steel, core, and wrap it with wire of peculiar shape; it was an H-shaped wire. What I proposed was to make a core of sufficient thickness and strength to resist the longitudinal strain. Then, to prevent the bursting of the gun, I proposed to cut a screw on this core the whole length, make a roll of the H-shaped wire and lap it around. One leg of the H would take into each thread and fill it half full, and as it came around the next turn the leg of the wire would enter the thread and fill it full, leaving a screw still on the surface. Then we would start another layer of wire, and so on, which would bind the whole together longitudinally, as well as circumferentially. I had investigated it, until I became satisfied that this wire should be wound on with a constant tension, in order that the exterior of the gun might be under a force of extension, while the interior was under a force of compression.

The law of development of strain or resistance in a gun by the action of the evolved gases requires this, in order to cause the whole thickness of metal to act in concert, and not be broken in detail.

I found that Barlow had established, theoretically, the law that the strain developed by the action of a central force upon the thin concentric cylinders, of which we may conceive a gun to consist, is inversely as the squares of the radii of the cylinders, the gun being free from strain before the application of the central force. I wanted, therefore, to bring the gun into conformity with this law, or into such a condition that, under the law of development of strain, the interior would be relieved from its strain of compression and brought under one of extension, and to the breaking strain at the same instant as the exterior. Under those circumstances, the whole thickness of metal would offer resistance in proportion to its tenacity.

Question. One of the witnesses here, in describing it, said that you might consider the gun to be formed of concentric rings, and in cooling first from the inside they would be shrunk one over the other.

Answer. That is very true. I wrote to the Watervliet arsenal, where Colonel Baker was in command, to get the views of older officers about it. The view of Colonel Baker was, that the breech would blow out. While I was not fully satisfied that that would be the case, I found it difficult to get any one to say that this wire could be made in that form, and that the gun could be so made. There was, apparently, great difficulty in the way.

It then occurred to me, that if we could cool a cast-iron gun from the inside, we could accomplish the same thing. By causing the innermost layer to cool first, then cool the next layer and shrink it on, as you shrink tires on wheels, the shrinkage would be from the exterior to the interior, and the metal would be thrown upon the same strain as I have heretofore described, so that the entire thickness is brought into action instead of breaking the interior first, and the remainder in detail afterwards.

Question. In the old-fashioned way, the interior was already strained as much as it could bear?

Answer. In the old-fashioned way it was the interior that was strained, while the exterior was under a force of compression, the powder acting in conjunction with the compression of the exterior to break the interior; and I have no doubt that, in many cases, the interior of your gun is broken before the exterior is relieved from the strain of compression to which it was subjected in the process of cooling. The principle I advocated was to reverse the order of strain.

About that time I was ordered to Richmond, Virginia, to superintend the manufacture of cannon there. On my way I stopped at the Ordnance Office here and laid my plan before the acting chief of ordnance, General Talcott, at that time. Colonel Bomford being the head of the department, the idea was discussed, but not thought to be practicable.

I again offered my plan when Colonel Bomford was about to cast his 12-inch gun, which he cast in 1846, in Boston. I had a long conversation in the Ordnance office on the subject. I urged him to cast his 12-inch gun in that way. He spoke encouragingly of the idea, and I left the office with the impression that he would cast his gun on that principle. He, however, did not do so.

I then conversed with Messrs Knap & Totten, who were then the proprietors of the Fort Pitt foundry; especially with Mr. Totten, who was the practical man of the establishment at that time. I asked them if they thought the thing could be done. They were of the opinion that it might be done, and that it would be desirable to cast guns in that way; but that there would be some risk in undertaking to cast with a water core.

I was afterwards in Washington, and again proposed to General Talcott to cast cannon in this way, stating that I was satisfied it would make a better gun than could be made in the old way. He said the department was not in a condition to try it at that time. I then asked him if there would be any impropriety in, or objection to, my getting this done by private enterprise, and secur-

ing the invention by letters patent. He said "Certainly not," and appeared to be very glad indeed to get rid of the subject in that way and on those terms.

I then entered into an agreement with Messrs. Knap & Totten. They agreed to incur all the expense of testing the practicability of making guns in that way; they would make all the arrangements, and run what was thought to be the risk of burning down their foundry by the operation, if I would take out letters patent for the invention, and transfer to them one-half the interest in it; they would be at all the expense of taking out the patent, and incur every risk and expense in testing the invention, and we would be equal owners of the patent. That was done, and the invention was perfected. That is the idea of the thing in 1845, and between that time and August, 1847, those three offers of the invention were made to the ordnance department, and I insisted upon their taking it up and carrying it out. Had they done so, I should never have had a patent. But they declined it, and in August, 1847, I took out a patent, and conveyed to Messrs. Knap & Totten one equal half interest in it.

The thing ran on in that way until three years ago, I believe, when, not being in a condition to manage or take any share in conducting the business of manufacturing guns, I transferred to Mr. Knap the full control of the patent, he obligating himself to pay to me one-half cent per pound for all finished guns, hydraulic presses, or anything else that might be made under that patent, and on which he collected a "royalty."

Question. At what time was this method of making guns adopted by the government?

Answer. The first service guns that the government ordered made in this way were cast in 1859, or 1860; I do not remember the precise date.

Question. Do you know how many of those guns have been cast for the government since that time?

Answer. I do not know; I cannot tell. I know that at the South Boston foundry they have cast seventeen fifteen-inch guns, a number of ten-inch sea-coast mortars, and eight and ten-inch siege mortars; some siege howitzers, and a few ten-inch guns, not to exceed five or six.

Question. What facilities are there for constructing guns on this principle in the United States, and where are they made?

Answer. Mr. Knap, at his establishment in Pittsburg, is prepared to cast guns; I do not know to what extent. He has facilities for making them. So have C. Alger & Company, at South Boston. They have also certainly cast ten-inch guns in that way at the Scott foundry, at Reading, Pennsylvania; also thirteen-inch navy guns; and I received a letter from Mr. Parrott the other day, stating that he had cast a 300-pounder, I believe in that way. So that he is now prepared to cast guns in that way—to what extent I cannot tell.

Question. He intends to improve his gun by first casting it upon your principle and then putting the band or jacket on it?

Answer. Yes, sir.

Question. Is it supposed that that will improve his guns to any considerable extent?

Answer. I think it will make an improvement in his guns.

Question. There are four places, then, where guns are made on your principle?

Answer. Yes, sir.

Question. What is the additional expense, where guns are now cast on the old plan, to adapt your method to the casting of heavy guns?

Answer. To get up the core-barrel, as we term it, for the ten-inch guns, would involve a cost, I suppose, of from three to five hundred dollars.

Question. Then there is no great difficulty in turning from the old method to the new, wherever they have establishments?

Answer. Not at all. They must have water, or a blast, arranged for using

air. Air may be used for cooling, as well as water, and is comprehended and embraced in the patent. The first gun we cast hollow was cooled with air.

Question. The principle being the same?

Answer. Yes, sir—merely to extract the heat from the interior.

Question. What amount of "royalty" does the government pay on these guns now?

Answer. I do not know anything about what Mr. Knap receives from the government. My impression is that he receives so much per pound for the gun.

Question. I do not suppose that it is under the name of "royalty," but it is an enhanced price in consequence of this discovery?

Answer. I think the enhanced price that Mr. Knap charges for the use of the patent is one cent per pound on the finished gun.

Question. Of which you have one-half?

Answer. He pays me one-half cent per pound; whether he gets more or not I do not know. My impression is that he does not.

Question. What is the difference to the government, in the price of these guns, between the old and new method of casting? Is it anything more than the cent per pound?

Answer. I think nothing more than that. The only difference would be, if you were in a place where you had no water, and had to get up machinery for pumping water, or using a blast to cool with, that would be added. The preparation of the core-barrel, setting it, and removing it, would, for say a ten-inch gun, be about compensated for by the amount of metal that would be saved, which they would not have to buy, and melt, and bore out. The gun is more quickly bored out when cast hollow than when cast solid. My impression is that the 15-inch gun can be made at less expense by casting it hollow, if you are prepared to make it, than to cast it solid. I have had some experience in superintending the manufacture of guns, and, if it were left to my choice, I would rather, considering it entirely as a pecuniary question, make a 15-inch gun hollow than solid.

Question. Then the increased expense to the government would be merely this "royalty," paid for the discovery?

Answer. Nothing more.

Question. Do you recollect at what price these guns are offered to the government? It depends, I suppose, somewhat on the size of the gun?

Answer. It does depend upon the size of the gun. The 8 and 10-inch guns, I believe, are now furnished at 9½ cents per pound. The 15-inch guns are, I believe, \$6,500 each.

Question. It costs more per pound to get up one of those large guns than a smaller one?

Answer. Yes, sir, it does, in the preparation for handling a gun of that kind—the handling of it in the foundry, and the boring of it; you cannot touch it with less than 20 men, or you must have the corresponding machinery in their place. And another thing, we are as liable to lose a 15-inch gun as a 10-inch gun, and when you do lose it you have trouble on your hands. It is a big thing to get rid of, and the increased risk must be made up in the increased price of the gun.

Question. The materials selected for these guns are the same in the one case as in the other?

Answer. Yes, sir. The material with which you start is the same. It requires a little different treatment to make a large gun.

Question. In selecting your iron for guns is there any preference—any iron in the country more particularly adapted to those guns than any other? If so, from whence do you get it?

Answer. Guns have been made from iron from quite a number of localities. Formerly, Hanging Rock, in Ohio, furnished as good iron as made anywhere in the western country. But the furnace got out of practice in some way; got

into other hands that were less careful, and up to within two or three years that iron has not stood high. The best iron that we have found that has been used at Pittsburg is made from the hematite ores from Blair county, Pennsylvania. What we call the Bloomfield Furnace made an iron from which we made the first 15-inch gun. That iron gave a tensile strength in the 15-inch gun of from 33,000 to 35,000 pounds to the square inch, which is 5,000 pounds better than the old iron from which we used to make solid guns. Iron from the Salisbury ores in Massachusetts is used at Alger's establishment, South Boston; some of it at Parrott's establishment, along with the Greenwood iron; and at Providence, where I believe they are making guns for the navy. I have found the Salisbury iron to be an excellent iron; it gives in the 15-inch gun a tensile strength of from 34,000 to 36,000 pounds; it is a very uniform, excellent iron. These four localities yield the principle ores from which gun-iron has been obtained for the northern States.

Question. Have you ever tried any of the Lake Superior iron?

Answer. I have not. I have had no experience at all with iron from that ore.

Question. These guns could be made, then, if the government should want them, with as much facility as the old-fashioned ones?

Answer. With quite as much facility. The 15-inch, as I have said before, can be made with more facility, for it takes less time to bore them, and only about half as long to cool them. As for the mortars, if they were in great straits and wanted them in a great hurry, I should not hesitate at all to furnish them as they were cast, without boring them out at all, for I could cast a bore for a mortar good enough for an emergency.

Question. Have you any particular acquaintance with the Parrott rifled gun?

Answer. I know it from seeing the drawings of it. I have seen several of these guns, but I have never seen but two fired, one ten and one thirty pounder. I have had no practice with them at all.

Question. Would there be any difficulty in rifling the guns made on this principle, if thought best?

Answer. No sir, not at all. They are better adapted to rifling than guns cast solid, for the reason that the metal of the interior is harder and closer, and will not be so readily abraded by the passage of the shot along the grooves.

Question. You have had, from your official position, a long experience with guns of all kinds. What, in your judgment, are the best heavy ordnance guns in our service, for efficiency, durability, &c.?

Answer. I must say that I believe the hollow-cast gun, for heavy ordnance, is the best gun we have; for all guns of heavy calibres you may undoubtedly make a very efficient gun, if you go to the expense of building up, as Armstrong does; and if you make a cast-iron gun of a given thickness of metal, cooled from the interior, and then shrink a band on the outside, as Parrott does, you undoubtedly increase the strength of the gun. But if you were to cast a gun, originally, of the same exterior dimensions of a gun with the ring or band added to it, I believe the cast-iron gun would be as strong as the one with the wrought-iron band on it; and I will give the reason why I think so. In banding a gun you do not get the full benefit of the transverse resistance which the metal of the gun offers to rupture. To illustrate: Take a beam of timber and lay it down on its two ends, it will bear a certain load in the middle. Now, if you saw that stick of timber into a dozen boards, and lay the pile of boards down in the same way, it will sag down in the middle; it has no transverse resistance; the boards slip on each other. Now, in the case of a gun, when the shot is two calibres from the bottom of the bore, and the gases from the powder are pressing out in all directions, the tendency is to form the space that the gases occupy into a sphere to bend the metal of the gun outward, and the power of transverse resistance operates to prevent that bending out. If, therefore, your gun is cut into layers, as in a built-up gun; or if it consists of a cylinder of cast-iron, with

a wrought-iron band shrunk on it, these layers have a tendency to slip upon each other, affording a less transverse resistance; whereas, if your gun is in one piece it cannot bend out; so that the resistance which the gun can offer to the maximum effort of the powder, before the shot is moved a great distance, is greatly increased by having it of one solid piece, rather than in bands. And another objection to banding is, that after a while the band will become loose, for there is no material of which to make the band that has an indefinite elasticity. Any man that has ever had tires shrunk upon carriage wheels is familiar with the fact that he has occasionally to have the tires cut and reshunk. In heavy rolling mills, and places of that kind, where bands are shrunk upon iron in machinery, it is notorious that, shrink the band on as tight as you please, it will, after a time, become loose. The tires on locomotive wheels, after a time, become loose, and I am satisfied that the bands on these guns will, after a time, cease to exert any strain.

Question. And while it retains its place, it is not as strong as it would be if incorporated with the rest of the gun?

Answer. I think it is not.

Question. But there is this in its favor, is there not? It is wrought-iron, and the strain is in the direction of the grain of the iron.

Answer. Yes, sir. It is better to build up wrought-iron guns in that way than in the other way. But cast-iron is equally strong in any direction. Then there is another thing: if you put on these rings, or bands, in large masses, you have to keep them under heat for some time in order to weld them. If you are to band a 15-inch gun, you must have a band of some eight inches in thickness, and you cannot get out such a band and forge it so as to be always sure that it is properly welded; and if properly welded even, the length of time it takes to cool from a welding heat will afford an opportunity for the iron to assume its natural condition, which is a crystalline structure, and I venture to say that if you cut into or break a band for a 15-inch gun, or a 300-pounder Parrott, you will find it crystalline, instead of fibrous, in structure, and its tenacity will not be greatly in excess of good cast-iron, and you are liable all the time to find weak places in it, bad welds, and cinder streaks.

Question. Do you not believe that Parrott's method of banding has added greatly to the strength and efficiency of his rifled guns?

Answer. I believe it has made the guns on which he has placed the bands stronger than they would be without. But, as I said before, I believe if he had made the gun originally of the same exterior dimensions that it is with the band on, cast hollow, and cooled from the interior, he would have a stronger gun.

Question. Your idea is that you can make a rifled gun of cast-iron as strong as his guns are with wrought-iron bands?

Answer. Yes, sir.

Question. And if you can do so the guns would be cheaper, would they not?

Answer. Yes, sir; materially cheaper.

Question. Why has not that been tried in rifled guns, since rifled guns are so much in vogue?

Answer. We have had an 8-inch and a 12-inch rifled gun at Old Point since the early part of 1861. The 12-inch rifle is of the exterior dimensions of a 15-inch gun. That gun has never been tested. It was fired a few times. General Butler, I believe, was the first to fire it with some of James's projectiles, but they stripped and turned over, and did not perform well.

Question. Did not follow the grooves?

Answer. No, sir.

Question. Was not that owing to the great weight of the projectile?

Answer. Perhaps so.

Question. Do you think you can get a rifled motion on a 15-inch ball?

Answer. Yes, sir; but I am not sure you would do it with the expanding principle. By order of the ordnance department I have sent twenty-five 12-inch and the same number of 8-inch projectiles to Old Point to be fired from these rifles. These projectiles have grooves cut in them, so that they are locked with the gun, and cannot get out without rotating.

Question. That is somewhat on the principle of the Whitworth gun?

Answer. Yes, sir; but the Whitworth gun is not grooved; it has a hexagonal bore. It amounts to the same thing, though his is the harder form for the gun.

Question. The rifled gun is subjected to a greater strain, with the same weight of ball or projectile, than the smooth-bore?

Answer. It is, from the form of the projectile. There is a greater quantity of metal in front of your powder per square inch of area pressed upon by the gases in the rifled projectile than in the smooth-bore, because it is an elongated shot.

Question. Independent of that, how is it?

Answer. It presses against the barrel of the gun, producing friction, and that is to be overcome by the force behind it.

Question. And that would cause a greater strain on the gun?

Answer. Yes, sir, all other things being equal; and the expanding of the material into the grooves where you depended upon expanding it, in a large projectile, produces more friction than where you allow it to move down without being wedged in, in which case the band of the shot fills the groove of the gun within a certain point; the shot is perfectly free to move, but sufficiently tight to stop the windage—enough for all practical purposes.

Question. And in consequence of that they do not use so much powder behind a rifled ball as behind a smooth-bore?

Answer. No, sir; and the rifled ball attains a greater range than the smooth-bore, owing to its form, being more in the form of an arrow.

Question. How do you account for the fact that the rifled ball, with less initial velocity, will maintain its flight longer than the round shot?

Answer. That is just what I was speaking of. It is of a better form to overcome the resistance of the air. It is like a sharp-pointed vessel passing through the water in comparison with what is termed a "broad horn." In firing the rifled shot, in passing along from the gun it retains its axis of rotation, and remains parallel to its position in the gun, and, as it goes along, what resistance it meets with from the air tends to buoy it up and keep it from falling.

Question. A round shot may roll over?

Answer. Yes, sir; but in these large guns the rolling over is very trifling, indeed, and the accuracy with smooth-bore guns increases with the increased diameter of the calibre. What causes the shot to deviate, as a general rule, is its rotation as it passes through the air. It is almost impossible to discharge a shot without some rotation.

Question. I had supposed that the difference in accuracy between the rifled ball and the round ball consisted in the mere fact of the one having a rifled or spiral motion, while the other had not?

Answer. You can hardly get a ball exactly balanced in the air.

Question. And this spiral motion tends to keep it in position?

Answer. Yes, sir. If one side was lighter than the other, thus giving it a tendency to deviate, the spiral motion keeps it in its position, like the whirling of a top. The accuracy of the smooth-bore increases with the calibre, for the mass is much greater in proportion to the surface that meets with resistance from the air. Both the accuracy and the range of a smooth-bore, for a given initial velocity, increases with the size; for while the area of resistance which the air opposes to the shot increases as the squares of the diameters of the shots, the weight or ability to overcome that resistance increases as the cubes of the

diameters; therefore, in the larger sizes, the shot is less liable to deviate from the same causes than are the smaller sizes.

Question. Have you taken out a patent in Europe for your invention?

Answer. I have not. Mr. Knap is to do that if it is done at all. I have arranged with him to do so, and I believe he is now negotiating on that subject. I did not do it for the reason that I did not like to go abroad and attempt to introduce a thing that I had not been able to introduce at home.

Question. Has Mr. Parrott made an arrangement with you or Mr. Knap to manufacture guns on your principle?

Answer. He has made no arrangement with me. He advised me the other day, by letter, that he had cast one gun on that principle. I believe he has spoken with Mr. Knap on the subject.

Question. That will be a great improvement on his gun, even with the jacket or band?

Answer. It will be an improvement. It will be virtually substituting my gun for his. As I said before, if you assume a gun to be of a given diameter, and then put your wrought-iron ring outside of that, you will have a stronger gun than if you had put no wrought-iron on it.

Question. But you think that by casting the gun of a larger diameter you would have a still better gun?

Answer. By making a cast-iron gun on my principle as large in diameter as his is, after he has put on his band, I think you would have a gun as strong as his.

Question. Suppose the initial velocity of a ball from your 15-inch gun was too low, it would be increased of course by using an additional amount of powder?

Answer. Yes, sir.

Question. And suppose your gun as it has been cast was not thought to be strong enough for that additional charge of powder, is there any difficulty about increasing the strength of the gun somewhat?

Answer. It may be increased somewhat, I suppose, by adding a very large band.

Question. Or by making the casting thicker?

Answer. Yes, sir. There is no difficulty about that, except merely adding weight to the gun.

Question. If it was found, in practice, that such was the difficulty, you could remedy by strengthening the gun by putting additional weight in it?

Answer. Yes, sir; and if I were going now to model a gun to do the greatest amount of work, I should make it thicker than we have been making.

Question. From all your acquaintance with, and study of the subject of guns, both in this country and in Europe, would you say our guns were ahead or behind the most improved guns of the most martial nation?

Answer. Our guns are ahead of theirs, in my opinion. I should dislike very much, indeed, to exchange with any nation I know of.

By Mr. Gooch:

Question. You keep the outside of your gun heated while you are cooling the inside?

Answer. Yes, sir.

Question. At about what temperature?

Answer. We aim to keep the flask at a dull red heat; that is, keep it at as high a temperature as is consistent with the requisite strength of the flask to hold the fluid metal in it.

Question. And you consider your method of casting and cooling of as much advantage to the rifled gun as to the smooth-bore?

Answer. Quite as much—I will say of more advantage.

Question. Do you know whether, in rifling, the increased hardness of the gun is shown to be more than in the solid gun?

Answer. I know that the inner surface of the smooth-bore guns is harder when cast hollow, and, of course, it must rifle harder.

Question. If a gun were to be made upon the plan you have indicated, sufficiently large for the 15-inch gun, and rifled in the best manner, what would there be in it that any person could claim except yourself?

Answer. There would be nothing in it that anybody else could claim.

Question. Then, if I understand you, you, or Mr. Knap, or anybody else, with the right to cast guns upon your method, can manufacture a 15-inch rifled gun without paying any "royalty" to anybody else, or infringing upon another person's rights?

Answer. Yes, sir; unless they took some peculiar method of rifling; I believe there are some peculiar methods. I believe a gentleman by the name of Atwater has a peculiar method of rifling.

Question. The whole peculiarity of the Parrott gun is in the band?

Answer. In the band, and in the manner of cooling it while he is banding it, and in that I claim that he interferes with my patent.

Question. So that if the government wants now to use a 15-inch rifled gun, or a rifled gun of any other size, without banding it, it can be manufactured by using your method of casting it?

Answer. Yes, sir.

Question. Would you not, then, recommend that the government should make such guns and test them?

Answer. I would. I have already done so. I made application not over three months ago for that to be done, but I was refused it in my own ordnance department. The navy, however, are testing the matter. They are making a gun, and rifling it on the principle I proposed, and, I believe, the gun is now complete at Pittsburg.

Question. In the firing of the Parrott gun is there not a tendency, at every discharge, to separate whatever connexion there may be between the band and the solid or cast part of the gun?

Answer. Unquestionably.

Question. Suppose that separation be to any considerable extent, is not then the whole power of the band destroyed?

Answer. It is all nullified. The gun then begins to break on the inside; and when it begins there the band does not stop it.

Question. Then it is true in relation to the banded gun that, just at the time when you need the service of the band, after the gun has been fired a considerable number of times, you lose all benefit from it?

Answer. I think so; that is exactly my opinion. I would like to make one remark upon this matter. I do not want to be understood as being opposed, at all, to rifled guns. My opinion on that subject is, that we should have them on all our fortifications; especially those that are in localities surrounded by bodies of water, where a hostile vessel, or fleet, might lie at anchor beyond the effective range of our smooth-bore guns. There we want some large rifled guns, of the most effective character and perfect construction, to reach those positions; but, for the main armament of our forts, and for the principal reliance for the destruction of vessels, we must depend upon smooth-bore guns.

Question. Then it is true that, when the object which you wish to destroy comes within the range of our smooth-bore guns, they are superior to the rifled guns?

Answer. Yes, sir.

Question. But you can attain a range in rifled guns beyond what you can attain in a smooth-bore?

Answer. Yes, sir.

Question. And whether you want a rifled or a smooth-bore gun depends upon the distance at which you desire to operate?

Answer. Yes, sir.

Question. Do you know whether any attempt is now being made in Europe to construct guns upon your plan, or upon the Parrott plan?

Answer. I do not know; my opinion is that Captain Blakeley constructs his guns substantially, if not identically, upon the same principle as Mr. Parrott.

Question. So far as you know, is there any foreign gun which has any such merits over our guns that it would be advisable for us to introduce it into our service for any particular or special purpose?

Answer. I would think it well to take an Armstrong gun, or a gun built up of wrought-iron in that way, and make the best cast-iron gun we can along with it, and subject them both to extreme proof.

Question. And you would recommend that we should, by trial, compare the merits of that gun with our best guns?

Answer. Yes, sir; for it is only by comparing these things that we arrive at the truth. I advocate the cast-iron gun for the reason that I believe we can make about as good guns of cast-iron as we can in any other way, especially large guns; the larger you go the more in favor of cast-iron; and, when it comes to doing a given amount of battering, you can do it with cast-iron guns for less money than with any other guns that can be made.

Question. Would you recommend that we should test the Whitworth gun?

Answer. I would not. I think its hexagonal bore condemns it. You there have the interior of the gun with sharp corners, where fracture is sure to begin. The gun is weakened by having these angles. There should be no angles in the interior of the gun. In the rifled gun it is absolutely necessary, but I would avoid it if I could.

Question. So far as you know, have the affairs of the ordnance department, since the war commenced, been conducted with energy, fidelity, and ability?

Answer. I do not know anything to the contrary of that. I have no evidence of a want of fidelity in any part of it. There are some things I would have done that have not been done. I may be wrong and the department right.

Question. Merely a question of difference of judgment?

Answer. Yes, sir; I would instance the proving of these rifled guns at Old Point. If I had been in charge of the department I would have had those guns tested before this, and known what they would do. I would have had the 15-inch gun proved to extremity, as was recommended two or three years ago. I merely give that as illustrating what I mean.

Question. Is there any material difference in the weight of a gun of the same external maximum diameter, banded according to the method of Captain Parrott, and one made all of cast-iron, as indicated by you?

Answer. I do not think the difference would be great. The change in the model of the gun as now made, to the form I should make it, to be equal in its maximum diameter to that of the banded gun, would increase its weight, I think, beyond that of the banded gun.

Question. Will you state to the committee what you deem to be a proper charge of powder for your guns of the several calibres?

Answer. What is ordinarily termed the service charge of a gun is fixed, or intended to be fixed, so low as to render the gun absolutely safe. The service charges fixed for the 8 and 10-inch guns are ten pounds of powder for the 8-inch, and fifteen pounds for the 10-inch; the 8-inch gun throwing 64 pounds of metal, and the 10-inch 126 pounds. The service charge for the 15-inch guns was fixed, after the experiments made with the gun, at 35 pounds, I believe. I am not positive of that, but that is my recollection; but any of these guns may be fired with heavier charges, and it is intended that the intelligent artillerist will always use and exercise his judgment as to the proper charge to be used in the accom-

plishment of a given object, and he should be acquainted with the maximum limit of the charge to which he can go. A 10-inch gun, a trial gun, made at south Boston, has been fired a thousand rounds with fifteen pounds of powder; one-fourth of the rounds with solid shot weighing 126 pounds, and three-fourths of the rounds with shell of about 100 pounds weight. This same gun, after these thousand rounds, was then fired 100 rounds with twenty pounds of powder and solid shot, then 100 rounds with twenty-five pounds of powder and solid shot, and then 200 rounds with thirty pounds of powder and solid shot. The gun now shows no sign of deterioration. The 15-inch gun has been fired with as high as fifty pounds of powder, and my impression is that it was fired with sixty pounds of powder, but I am not positive of that. The intention was to demonstrate the endurance of the 15-inch gun, up to a certain number of rounds, with such charges as would be likely to be fired from it in service; the purpose of those large guns, at that time, being to strike objects near at hand. I have no doubt at all that the 15-inch gun, with the large-grained powder which we use in it, may be fired with safety 500 times with seventy-five pounds of powder. On the subject of powder, I would state here that the powder used in this gun, if we should use seventy-five pounds, or if we should use only forty pounds, would not all be burned *in the gun*. It is not intended that it should all be burned in the gun. The object in increasing the size of the grain of powder is to diminish the initial burning surface, and thereby diminish the maximum pressure exerted upon the gun, and cause the difference between the maximum pressure and the minimum, or that exerted when the shot leaves the gun, to be as small as possible; and in order to do this, to the best advantage that grained powder will admit of, the larger the grain when it leaves the gun, or the more that is thrown out unburned, the more nearly uniform will be the pressure from the bottom of the bore to the muzzle of the gun, and the less the strain upon the gun in producing a given velocity. This amounts to saving your gun at the expense of powder. It is believed that another form of projecting charge, of which some have been tried, and which is denominated, in my report of experiments, as "perforated cake," will accomplish this object, with the minimum strain upon the gun, and with no undue expenditure of powder; the charge in this case being all burned in the gun. I would add, however, that the cost of this "perforated cake" powder is something more than that of grained powder.

Question. What is the size of the cake of powder, or what should it be?

Answer. The size of the cake should be such as to permit it to go into the bore of the gun, leaving proper windage, so as to be always sure of its going down. Those made for the 15-inch gun were made in hexagonal cakes, and then built up, in the style of mosaic pavement, until we got it as large as would go into the bore of the gun. And from the fact that its initial burning surface is at its minimum, at the moment of ignition, and increases until the charge is wholly consumed, that kind of projecting charge gives you the nearest approximation to uniformity in pressure along the bore of the gun that can be obtained within my knowledge.

Question. What would be the difference of cost between that powder and the powder now in use?

Answer. My impression is that the difference in cost would be about three or four cents per pound. If prepared to manufacture it on a large scale, I have no doubt the cost would be reduced.

Question. Have ordnance officers devoted themselves, to any considerable extent, to the improvement of ordnance, since the commencement of the war?

Answer. No, not to any great or practical extent. Their duties have been so much increased in meeting the demands consequent upon the present war, since its commencement, that ordnance officers have not been able to devote their attention to that subject; and most of the attention they have given to the sub-

ject has been in testing and considering the plans proposed by inexperienced persons, the result being that they thus have had no opportunity of carrying out any digested system of experiments.

By the chairman :

Question. Have not ingenious men, outside of the military profession, had their attention very much directed to this subject, and brought in a great many inventions—more than usual ?

Answer. They have ; and another thing in reference to the series of trials that we have been speaking of. My opinion is that the proper course to arrive at practical and valuable results, in any trials of that kind, is to give to one or two officers of experience and ability the means and authority to make such experiments as are necessary to decide any point it is desirable to ascertain in connexion with these matters.

By Mr. Gooch :

Question. Have we competent officers who can be spared for that purpose ?

Answer. We have competent officers ; it is not for me to say whether they can be spared or not.

Question. Would, in your judgment, the services of such competent officers be worth as much to the government, if employed in that way, as they are now ?

Answer. I should say they would be worth more than in any other capacity. I would like to add that on the completion of the experiments with the 15-inch gun, seeing that they had demonstrated its capability to endure a sufficient number of service charges, I recommended that it be now put to extreme proof, to determine its endurance and its effect upon targets of different kinds. Those experiments have not yet been made. The recommendation will be found in my printed reports.

The foregoing is the corrected testimony given by me before the joint committee of Congress on the Conduct of the War, on the sixth day of February, 1864.

F. T. RODMAN, *Major of Ordnance.*

WASHINGTON, *February 6, 1864.*

Major A. B. DYER sworn and examined.

By the chairman :

Question. What is your rank and position in the army ?

Answer. I am a major of ordnance.

Question. What have been your opportunities to make yourself familiar with the character and efficiency of our heavy ordnance—say the Rodman gun first ?

Answer. I have had a great deal of experience in firing to extremity some of our large guns, particularly one pair of 10-inch guns, which were made at the Fort Pitt foundry. They were sent to me as having been cast from the same metal, and at the same time.

Question. On this Rodman principle ?

Answer. One on the Rodman principle, and the other cast solid, and then bored out. I understood that the guns were tested at Pittsburg before they were sent to me at Old Point, where I was then stationed. I fired them at Old Point, with the same charges precisely, a great number of times. Neither was burst, and both gave evidence of great strength. But the two guns were very unlike in condition at the conclusion of the firing. When I commenced the firing, the solid cast gun was very much worn about the seat of the shot, and the wearing afterwards continued, while the other gun at the end of the firing exhibited

very little evidence of having been worn, or abraded by the gases. I fired these guns with the same weight of powder, and the same weight of projectile several times, under the same circumstances, and obtained the ranges, and also the maximum pressures upon the bores, by means of an instrument which had been devised by Major Rodman. The ranges and the pressures obtained from the hollow cast gun were considerably greater than the corresponding ranges and pressures obtained from the solid cast gun. I attributed this to the difference in the wear of the bores of the two guns, and I am convinced that, at the conclusion of the firing, the hollow cast gun had really endured much more than the solid cast gun, and that it had sustained much less injury from the firing. I have had no other experience in testing the endurance of pairs of guns made from the same metal upon the two principles.

Question. Have you tested other large guns—the Parrott gun, for instance?

Answer. I have never tested the Parrott gun; believe I never saw one fired.

Question. What is your confidence in the efficiency of our large guns, such as we use now in fortifications and on shipboard?

Answer. In regard to the guns which are used on shipboard, I know very little. I am satisfied that the large guns we are now making are reliable guns. I believe they are the best guns we have ever had, and equal to any guns which have ever been made.

Question. Have you had any experience with the large 15-inch Rodman gun?

Answer. I have. I was at Old Point when the first gun was sent there to be tested, and I superintended the firing of it for, I think, 512 rounds.

Question. What was the effect of that firing upon the gun?

Answer. At the conclusion of the firing I had the gun star-gauged with great accuracy. The star-gauge is an instrument which is used to determine the diameter of the bore. The measurements were made with great accuracy, and at a great many points, and the bore was found to be uninjured.

Question. What amount of powder did you use in these trials?

Answer. I think the first charge in the 15-inch gun was 25 pounds. We fired a few times with that charge, and then increased the charge more and more up to 50 pounds.

Question. What shot did you use, solid shot or shell?

Answer. Shell weighing, I think, about 350 pounds each.

Question. Have you an idea that it would be safe to use a charge of 60 pounds in that gun?

Answer. I have every reason to believe it would be. I think the fact that there was no enlargement whatever in the bore, after the gun had been fired upwards of 500 times, is conclusive evidence that 60 pounds might be used with safety.

Question. It has been said by some of our military men that the service charge for that gun was 35 pounds, and they thought the initial velocity of the ball was too low. What is your idea about that?

Answer. For some purposes 35 pounds would give sufficient velocity. If great penetrating power, or great range was necessary, a greater charge would have to be used, perhaps more than 60 pounds. In the experiment I made with the 15-inch gun, I obtained an initial velocity of about 1,100 feet per second.

Question. What was the charge you put in to obtain that velocity?

Answer. Fifty pounds.

Question. Are the guns we manufacture now made pretty much all on the Rodman principle?

Answer. I have no means of knowing absolutely, but I have understood and I believe that all large guns for the army, and all 15-inch guns for the navy, are made on the Rodman principle.

Question. How do you account for the increased strength of this Rodman over the old-fashioned gun cast solid, and then bored out?

Answer. I understand that the Rodman gun is cast upon a core or metal tube, which is covered with clay to protect it from the heat of the melted iron, and that it is cooled from the interior by means of a stream of cold water, which passes through the bore while the heat on the exterior is kept up by a fire in the pit. The inner layers or cylinders cool first, and those exterior to them in cooling afterwards contract, and press upon or hug them, thereby relieving them from all strain of extension. This continues until the mass is cooled, at which time I believe the inner portions of the gun are compressed, while the outer parts are extended. In the solid cast gun, the cooling being wholly from the exterior, the reverse takes place, and the interior of the casting is subject to a strain of extension, which increases towards the centre of an axis. The spongy appearance of the metal, and the fissures, or cracks, near the axis of large solid cast guns, furnish conclusive evidence that the metal of the central part is highly strained in cooling.

Question. Does it not also harden the inside of the gun; make it harder than it otherwise would be?

Answer. Unquestionably it does,

Question. Something on the principle of chilling the outer rim of car-wheels.

Answer. I think there can be no doubt of that; the results of the experiments I have referred to, as having been made by me at Old Point, furnish evidence of that.

Question. How do you compare our improved ordnance with that of Europe, so far as you understand? Is it superior or inferior?

Answer. I am satisfied that it is superior to the heavy ordnance of any European nation. During the Crimean war a considerable number of large guns, especially the 13-inch English mortars, burst, and those guns were generally regarded as unsafe. Many of our 13-inch mortars have been fired a great many times, and, I believe, not one has burst. I have not heard that any of the Rodman guns have burst except one, under very peculiar and extraordinary circumstances, at Frankford arsenal. A year or two ago I had a conversation with Colonel Wilmot, of the English artillery, who at one time had superintended the construction of cannon at the Woolwich arsenal, in relation to ordnance. He inquired what I thought of the Rodman method in comparison with the Dahlgren method. I told him that my experience satisfied me that the Rodman method was the best, but I gave him no reasons why I thought so. He told me that his government had made and tested two pairs of 13-inch mortars, one of each pair being cast solid, and the other cast hollow and cooled from the interior; that each pair was fired together, and, as nearly as possible, under the same circumstances; that both solid cast mortars burst before reaching 500 rounds, and that both of the hollow cast mortars had endured 1,000 rounds. He said he was convinced that guns made in that manner were superior to the solid cast guns.

Question. From whence did the English get this idea of casting hollow?

Answer. They may have obtained it from this country. The experiments of Captain Rodman have been published, and are, of course, known in Europe.

Question. That was since his invention?

Answer. Yes, sir; Colonel Wilmot told me the trials took place after the Crimean war. He did not say the hollow cast mortars were made on precisely the Rodman principle. He did not give the details, but only said that one of each pair was cast solid, and the other cast hollow and cooled from the interior.

Question. Do you know anything about the efficiency of the Parrott gun?

Answer. I really know very little about it. I have had no opportunity whatever of seeing those guns, or of seeing them fired.

Question. Have any of the large 15-inch guns been rifled and tried in that way?

Answer. They have not been tried. One gun, of the exterior dimensions of the 15-inch gun, with a bore of twelve inches, was made and rifled at the Fort Pitt foundry some two or three years ago. It was sent to Old Point, as I un-

derstood, for trial immediately after the breaking out of the war. I was ordered away from Old Point very soon afterwards, and do not know how often it was fired. I believe it has been fired a few times only. I have regretted that it, and also an 8-inch rifled gun, made on the Rodman principle, which was sent to Old Point for trial about the same time, were not fired to extremity to test their endurance and fitness for service immediately after they were sent to Old Point.

Question. We are directed by this resolution to ascertain about the price of those guns, the cheapness of them, and the amount of "royalty" paid by the government. Do you know anything about that?

Answer. I know nothing about the price; I have had no opportunities of knowing what price has been paid; I have never inquired. As to the "royalty," I have understood that a charge is made upon the patent. I have every reason to believe that it is so. There are parties who can give you that information.

Question. I suppose that, perhaps, we have that information; but, as you are an ordnance officer, I thought I would ask you the question.

Answer. I will say that I wrote to General Ripley, the chief of ordnance, about two years ago, urging the importance and necessity of having our heavy ordnance made upon the Rodman principle; and, in a subsequent conversation, I told him that the advantages which would be derived from the change would more than compensate for any royalty or increase in price which might be consequent thereupon. I told him that the cost of those guns would not exceed that which was paid by the navy for the Dahlgren guns, and that I felt assured that we should get better guns. General Ripley told me that he would have the large guns made upon the Rodman plan, and I shortly afterwards heard that orders had been given to that effect by the department.

Question. I would inquire whether all men acquainted with the properties and manufacture of iron agree as to the principle on which these guns are claimed to be the strongest?

Answer. I do not know that all such persons do agree upon it. I believe it would be difficult to propose any question unless it be one of pure mathematics, upon which different views and opinions would not be entertained, and it is not unlikely that some persons acquainted with working cast-iron, and with many of its properties, do not agree as to the principle. I believe, however, that most persons acquainted with iron and its properties are convinced of the correctness of the principle. I have conversed with many scientific gentlemen in and out of the army who are. I believe all the experiments which have been made tend to establish the correctness of the theory upon which the plan is founded.

Question. From all your acquaintance, as an ordnance officer, with our guns, are you of the opinion that, as a general thing, we are improving over the old method? Is what we are doing now an improvement on the old-established way of doing things?

Answer. A very decided improvement, in my opinion. I think our guns now are really worth much more than any guns we had fifteen, or ten, or even five years ago.

Question. Is there any further information which you deem important which you can give us on this subject?

Answer. I believe none of the hollow cast guns have burst in service during the war. Many of the 13-inch mortars, and some of the other guns have been fired a great many times. I have already stated that many 13-inch English mortars burst during the Crimean war.

Question. Are those 13-inch mortars the largest calibre used by the English?

Answer. One monster mortar has been made, but it has never been used; it has been fired a few times with very light charges. The 13-inch mortars are the largest service mortars they have.

Question. And they are the largest mortars we have.

Answer. Yes, sir.

Question. And ours, so far, have all stood the test.

Answer. Yes, sir; I think if any one had burst I should have heard of it.

By Mr. Gooch:

Question. In your opinion, has the matter of banding guns, in the mode adopted by Captain Parrott, been fully tested, so that it is demonstrated that a gun with a band is stronger than would be a gun all of cast-iron of the same exterior maximum diameter?

Answer. I do not think it has been; some trials have been made with a view to that end, and I believe the banded guns have shown the greater endurance; but all the conditions were not precisely alike, and, in my opinion, the variations were sufficient to account for the difference in endurance. Pairs of guns made several years ago, at the same foundry and about the same time, were selected for these trials, and were fired with the same charges. The banded guns had copper vent pieces, which were very little worn by the firing. The vents of the unbanded guns were drilled in the cast-iron and were greatly and rapidly enlarged by the firing. I think, in some instances, the gases acted as a wedge in the enlarged vent and the fissures about it, and assisted largely in bursting the gun. In the guns which burst through the vent, I have but little doubt that their endurance would have been increased if they had had copper vent pieces. I think a series of experiments might be made at a moderate cost, which would demonstrate conclusively whether any benefit is derived from banding guns; and if there is, whether it is commensurate with the increased cost of the gun. To do this, I would have several pairs of large guns cast, each pair being cast from the same pool of melted iron, the only difference between the guns of each pair being, that one gun should be banded and the other should have an increased thickness of metal to compensate for the band. I would have these pairs fired at the same time, with the same charges, and with all the other conditions as nearly alike as possible. I believe the information to be derived from such a series of experiments, properly conducted, would fully justify the expense of making them.

By Mr. Harding:

Question. The copper vent in the banded guns, after the unbanded guns had been burst, was not cut away at all?

Answer. Very little; scarcely enough to be observed. Pure copper resists well the action of the gases, while cast-iron, especially in rifled guns, is worn away very rapidly.

The foregoing is the corrected testimony given by me before the committee of Congress on the Conduct of the War, on the 6th of February, 1864.

A. B. DYER, *Major of Ordnance.*

NAVY DEPARTMENT, *April 30, 1864.*

SIR: I have the honor to forward herewith the reply of Rear-Admiral Dahlgren to certain inquiries of the Committee on the Conduct of the War, made under date of the 3d of February last.

Very respectfully, &c.,

GIDEON WELLES,
Secretary of the Navy.

Hon. B. F. WADE,

Chairman of the Committee on the Conduct of the War, U. S. Senate.

U. S. FLAG STEAMER HARVEST MOON,
April 15, 1864.

SIR: I have the honor to acknowledge the receipt of the communication of your honorable committee, enclosing a resolution of the Senate, in relation to the rifled and smooth ordnance used in the United States navy and army.

It would be a very agreeable duty to me to meet the requirements of the committee as completely as the importance of the subject deserves; but to do so would be equivalent to writing a history of the progress and condition of ordnance for many years past, the most prolific in radical changes that have occurred since artillery became of any importance, making no doubt a considerable volume.

This I am sure the committee do not desire, and will, therefore, limit my reply to a brief notice of the principal points involved.

1st. I am unable to say positively what kinds and calibres of rifled ordnance are used by the army or are assigned to our fortifications, having no official connexion with that department of ordnance.

2d. I am not aware that any proportion of rifled ordnance has yet been established for the armament of vessels here or abroad; nor is there likely to be, until some kind of rifled ordnance has been devised which will more fully accomplish their purpose than any now in existence.

3d. No heavy rifled cannon has been made which meets, even in a moderate degree, the requirements for arming ships-of-war. This I can affirm of my own knowledge, so far as the United States are concerned; and I insert here some extracts from statements very recently made by British authorities, which will show to the committee that the great naval power of Europe is quite as much at fault as we are, after having spent immense sums during the last few years in order to obtain suitable rifle cannon of sufficient calibre.

The first extract is from the speech of the Marquis of Hartington, under secretary of war, explaining to the English Commons the war estimates for 1864.

[House of Commons, March 2 to Friday, March 4, 1864.]

ARMY ESTIMATES.

The Marquis of Hartington said that before he asked the committee to agree to the resolution with which he should conclude, it was fair that he should state that he should that evening have to lay upon the table a supplementary estimate for the year 1863-'64, which in a few days he should ask the house to vote.

He had stated that their stores in respect to small-arms were everything that they could desire. When they came to the article of artillery he was not able to give the house so consolatory an assurance. The report of the ordnance select committee which sat last year showed very accurately how the ordnance question stood at that time. As the result of their expenditure on Sir W. Armstrong's guns, they had the whole of their field batteries armed with the Armstrong gun. Those guns, he might safely say, were now almost universally approved and liked by the troops who possessed them. In New Zealand they were being supplied, and certainly they heard no complaints; the guns, as far as they knew, giving satisfaction. It was quite true that at one time in 1863 there was some doubt, some dislike felt, in regard to them among the artillery, on account of some failure, or rather symptoms of failure, in those guns; but it turned out that this applied only to some of the very earliest that had been produced, when the manufacture had not reached the perfection subsequently attained; and not even among those guns, he believed, was there ever any acci-

dent involving loss of life or personal disablement. Further experience had convinced the artillery, he believed, that they were in possession of an arm which could be trusted to for rough, actual service, and which, when they had learnt, as they were now learning, to use it, was one of most extraordinary accuracy and power. Besides the guns belonging to the field batteries they had a large number in store, with a considerable number in depot at Woolwich, ready to be sent out at any moment if required. Besides the 12-pounders in possession of the troops and in store, they had a large number of 20 and 40-pounders, and of those guns, and especially of the 40-pounders, it was, he thought, impossible to speak too highly. He believed that the troops, wherever they had them, said they were a most excellent gun, and very far superior to those they had supplanted. For new works, such as those of the land defences at Portsmouth, and also to accompany an army in the field, or to be used as guns of position, they were very valuable. Coming next to the 110-pounders, it was perfectly true they were not so popular or so greatly approved as the guns he had previously enumerated. The report of the ordnance committee had informed honorable members of what was supposed to be the overwhelming political necessities of the time which required those guns to be adopted and manufactured in large quantities without any very mature consideration or very extended system of experiment. It was believed that foreign nations had obtained rifle guns of great power, and that it was necessary, above all things, that we should have powerful rifle guns to compete with them. Therefore, the only gun of that kind which we knew of was adopted, perhaps with too much haste. But, although there were many objections to those guns, he believed that those objections were being gradually overcome. The question of the vent-piece—one of the most difficult questions of all—was being gradually settled. The improvements in the manufacture of steel had enabled the gun factory at Elswick to produce a vent-piece of superior durability. Although the 110-pounder, as far as they had yet tried it with cast-iron shot, was not of any material use against armor-plated vessels, still there were a great many positions in which it would be a most useful weapon. He thought that almost all the naval witnesses examined before the select committee, although they deprecated the use of the 110-pounder of Sir W. Armstrong as a broadside gun, yet stated that he would like to have some gun of that description in his ship for purposes of distant bombardment. For many works of land fortification also these guns would be extremely valuable. There were many positions requiring defence where it was not necessary to have a gun that was capable of piercing an iron-clad ship; and, therefore, although those guns would not do all that they could wish, yet their defects were being overcome. As to the gun which they were going to make, it was true they had not yet in the service a gun capable of doing effective work against armor-plated ships; but the experience they had had in regard to the 110-pounder ought to caution them against going too fast in that matter. There certainly was no immediate pressure to make them adopt a new gun for that purpose without the fullest consideration. If they had not got a gun capable of making effectual practice on iron-plated ships, they had reason to believe—nay, they felt perfectly certain—from all the information they could obtain, that no other nation had in its service such an arm. (Hear, hear.) Therefore, there was no overwhelming necessity for hurrying on in that direction. But if affairs should look more threatening than they did—if there should be any immediate occasion for iron-clads being called into action, it might be consolatory for the house to know that, as the result of their experiments, they had a system of construction which would give them a strong heavy gun and a mode of riding which, although it might not be the best that might hereafter be discovered, would yet enable them to make guns fulfilling all the conditions they required in a rifle gun, and strong enough to pierce any target yet manufactured. They knew now that the principle of making a muzzle-loading gun, the barrel of

which was composed of cast-steel, strengthened by wrought-iron coils, was capable of producing a strong gun, and that the inventions of Sir W. Armstrong combined almost perfectly all the requisites of a system of rifling. (Hear, hear.) However, as scientific and military men were very much divided into the followers of Sir W. Armstrong and Mr. Whitworth, it was considered desirable, as he stated to the house the other evening, that, before proceeding any further with the great question of artillery construction, the merits of these two great artillerists should be tested by an impartial committee specially chosen for that purpose, and at the same time the ordnance committee were engaged in a series of experiments as to the other best known systems of rifling and construction. He had explained the reason why so long a delay had occurred before the announcement of these experiments. They were now fixed for the 1st of April. They would have to be most carefully conducted, and would probably extend over a considerable period of time. It would be some months, perhaps near the conclusion of the year, before the Armstrong and Whitworth select committee concluded their investigations with reference to the competing guns; but in order that we should not lose more time than was necessary, orders had been given to the royal gun factory that a considerable quantity of material should be prepared for the system on which the committee should decide. The committee, no doubt, were aware of the performances of the 600-pounder or 13-inch gun, as it would now be called, and which had been extremely satisfactory in a limited number of experiments. Further experiments would take place in a few days; but, although the results were very satisfactory, it would be quite premature to enter largely into the manufacture of so expensive an arm until the fullest tests had been applied to its capability of endurance. If it should continue to exhibit all the excellences it was supposed to possess, two, three, or four more experimental 600-pounders would be ordered, that the government might feel quite certain that its excellences were not confined to one gun, but that they could be produced on a considerable scale and degree of perfection. If that gun could be reproduced and answered all the expectations raised by the trials hitherto made, then, he thought, we might feel certain we could produce a gun capable of fairly blowing any ship ever created out of the water. (Hear, hear.) The gun tried at Shoeburyness had almost destroyed the Warrior target. It was quite certain that with steel projectiles there was no ship floating on the water that could resist at 1,000 yards the shot fired by that 13-inch gun. He believed that in future warfare conducted against iron-plated ships the quality of projectiles would exercise quite as important, if not more important, influence than the gun itself. It had been found by experience that no gun, however powerful, could produce much effect on iron plates with only cast-iron shots. However heavy the blow struck, the shot itself was shattered to pieces without much injury to the plates. There was no manufacture in the country which had progressed with such rapid strides of late years as that of cast-steel. He believed improvements of the very greatest importance had been made within the last twelve, and even within the last six months. The ordnance select committee had been associated with the iron plate committee for the purpose of instituting and carrying out experiments with different kinds of steel formed into different projectiles and fired from different kinds of guns. They found that with steel projectiles fired from guns of very much inferior power to the 13-inch gun, such as the Duke of Somerset's gun, the smooth-bore 100-pounder, very satisfactory results had been obtained on iron-plated ships. He had stated at the commencement that he could not give a perfectly satisfactory account of our position as regarded guns; but he had endeavored to show that, if we were not in possession of a more perfect gun—more perfect as against iron plates—the fault was not that of the government, or the advisers of the government. They had prosecuted with the utmost diligence a series of experiments and they were still going on with them. The fault—if fault there was—was to the

manufacture of iron plates and projectiles to be fired from guns. There must be a limit to the thickness of iron plates, and he thought they had proved that there was scarcely any limit to human science and improvement. (Hear, hear.)

[House of Commons, Thursday, March 10.]

ARMAMENT OF THE ROYAL NAVY.

Mr. Berkeley rose to call attention to the defective state of the armament of the royal navy. The welfare of the navy was naturally a matter of such deep interest in this country that he felt he need make no apology for bringing this subject under the notice of the house. He trusted he might assume that a British ship ought to leave her port built, manned, and armed in a proper manner. As regarded the construction of ships, they were for a long time disgraceful in that respect, the models being largely borrowed from foreign nations, and the best of them from France. Of late years the admiralty had, however, made great improvements, and we now possessed the finest navy belonging to any civilized power. For many years there were also good grounds of complaint as to the manning of the navy. Lord Dundonald once drew attention to the very bad state of things which prevailed, but it continued for some time afterwards. So disgraceful was it that one of the board of admiralty resigned his seat because he held that the board did not do its duty on this point. At present, however, no ship was sent out without being perfectly well manned with a crew worthy of the British navy. He now came to the third branch of the subject—the armament; and here he regretted that he could not give the same approbation as in the two other cases. We had fallen behind foreign countries, and particularly the Americans, in the armament of our ships. At the time when Lord Dundonald was complaining that our ships were manned with the sweepings of the jails and by dint of press-gangs, the armament was also in a very defective state. We then sent out frigates carrying 18-pounders to cope with powerful ships carrying 24-pounders, and it was owing to that great mistake that the Americans were able to take into port, with the British ensign lowered, our *Macedonia*, *Guerriere*, and other vessels. The admiralty unfortunately did not find out the blunder till too late. They despatched the *Endymion*, armed with 24-pounder guns, which fully vindicated the honor of our flag in the contest with the *President*. It could not be said that the latter was vanquished in fair fight, for the odds were against her, but she was cut in pieces by the guns of the *Endymion*. The next improvement was the equalization of the calibre of the guns throughout the navy, the 32-pounder being taken as the standard. For some time the Americans did not gain any great advantage over us, though they secured a very powerful gun called the columbiad. We then introduced the Paixhan shell-gun into our navy, which was also used by the French, who, however, in addition, had 36-pounders instead of 32-pounders, as we had. The Americans were determined to procure a more powerful armament, and they succeeded. A very clever naval officer, Admiral Dahlgren, invented a gun on the Paixhan plan of nine-inch calibre; and they equipped the whole of their ships with shell-guns of one calibre. Although our frigates were more shapely to look at, the Americans contended that their ships, armed with the shell-guns, could pour forth a more formidable broadside. There could be little doubt of the prodigious effect produced by shells. At Sinope the Russians destroyed the Turkish fleet entirely by shells, and with one shell the *Alabama* sent the *Hatteras* to the bottom of the sea. We had now arrived at the epoch of iron ships. He did not wish to criticise the building of iron ships; he presumed we were at least on an equality with other nations, and he was contented to believe that every board of admiralty would carry on the best system of construction. But he trusted we should not fall into the great mistake of supposing that if

we could build iron ships, the Americans could not do the same. Their iron was superior to ours, and the Americans were an ingenious go-ahead people, who would never allow themselves to be beaten by us in any work of this sort. (Hear, hear.) At the battle of Solferino the Emperor of the French made a complete revolution in the armament of the world. He there produced a rifled gun which had a greater trajectory power than any that had ever appeared in a field of battle before. So great was the improvement supposed to be that all the nations of Europe set to work to arm their navies and armies with rifled guns. The French had already armed their navy with these weapons. What had we been doing on our side? We had spent £3,000,000; we had been six years hard at work, and now at last we were going back to the old gun which had been well termed the Brown Bess of the navy. The history of our operations was rather curious. It appeared that the Duke of Newcastle met somewhere an engineer named Armstrong who made a few guns. The honorable and gallant member for Huntingdon during his administration at the War Office laid hold of the same Armstrong, and it must be confessed that he got more out of him than any one else, for he set Armstrong upon doing that which Armstrong could do, and did not try him beyond his means. Under the superintendence of the honorable and gallant gentleman Armstrong produced 12-pounders which were excellent field-pieces, and he also turned out 40-pounders. It was for competent persons to decide whether the breech-loading principle was the one that ought to be preferred above all others, but it was not the general opinion throughout the artillery service that the breech-loading system was the best. However that might be, Armstrong made 100-pounders and 110-pounders for the navy, but it was a remarkable fact that all the guns he produced other than those ordered by the honorable and gallant member for Huntingdon were dead failures. As our seamen said, they fired at both ends; they blew away their breech-plugs, and destroyed the hair of our artillerymen with what was called a "mild escape of gas." (A laugh.) Captain Wainwright, when examined before the ordnance committee, declared they were the worst guns he ever saw in our navy, and his evidence was confirmed by the proceedings at Japan, where the guns were devious in their firing, and in some cases actually refused to go off. What was to be done? Were we to go to sleep in the happy belief that the Americans were in the same position as ourselves? He hoped we should do nothing of the kind. The Times always befriended Armstrong; but it was remarkable for its excellent correspondence, and it not unfrequently happened that its correspondents went very much in opposition to the gentlemen who wrote the leading articles. In one of his letters the Richmond correspondent of the Times had stated that Parrott guns in the north and Brook guns in the south possessed penetrative powers against which no armor plates could avail, and had expressed his astonishment at the apathy of our War Office and admiralty, which did not send over competent persons to watch the progress of armament in America, and see it brought to proof in actual warfare. The same gentleman in a second letter had written as follows:

"Again I feel tempted to raise a warning voice about the disparity of the armament on board of the English and American navies. It is impossible for those who have been many months absent from England to be well informed as to the actual state of public opinion at the present moment upon this vital subject. But, judging from the officers of her Majesty's navy who have at rare intervals brought vessels of war into confederate ports, it appears still to be held that the 63-pounder, or 8-inch smooth-bore, is England's best weapon of offence against iron-clad vessels. The experience gained at Charleston enables me confidently to affirm that as well might you pelt one of the Yankee monitors or the Ironsides with peas as expect them to be in any way damaged by their 8-inch shot. Another disagreeable question forces itself upon an Englishman's attention, when he is cognizant of the terrific broadside thrown by the eight 11-

inch guns of the Ironsides—one of the most formidable broadsides, in the opinion of the defenders of Charleston, which has ever been thrown by any vessel. Have we any ship in existence which could successfully resist such a broadside, and respond to it with anything like commensurate weight and vigor? I should be faithless to my duty if I did not mention that it is the universal opinion of all the English officers serving in the confederate army, with whom I have conversed, that England is behind America in the weight and power of the guns sent by both nations to sea.”

The other day there sailed from Portsmouth one of our armor-clad ships, the Hector, of 34 guns, but now with 24, of which 20 were the old 68-pounders and 4 were Armstrong rifled 110-pounders. The facts were given by the Times’ correspondent at Portsmouth, and the Times remarked that when it was considered that the guns on board the Hector only fired cast-iron projectiles it could be of little consequence, as against armor-clad ships, whether she carried 1 or 50 of such weapons. That ship was going to the Mediterranean, and would anchor alongside the Solferino and the Magenta, which were armed with 6½-inch guns, on the pattern of a certain gun that was tried in 1860 near Lorient, which carried 27 pounds of powder, and which, at 1,100 yards, sent its shot through and through a target representing the side of La Gloire. Suppose a war were to break out, and the Hector fell in with either the Solferino or the Magenta, what would become of her? But how were we in that state? Because in this age, when our ministers propounded the doctrine of throwing everything open to competition, they yet allowed a profound monopoly to exist in guns, shutting out all our most competent engineers. Everything must be done by Sir S. W. Armstrong, who when he made an expensive failure was not discharged, but was left to try again; whereas everybody who opposed him received the cold shoulder. Mr. Whitworth had never had a fair trial, though it was said he was now about to get one. Yet Mr. Whitworth had declared that he had no faith in the persons whom the War Office trusted in these matters. Again, there was the Mersey Ironworks Company, represented by the honorable member for Liverpool, and which had made the Horsfall gun—a weapon allowed by engineers to be of the finest malleable iron that ever came out of a workshop. Their gun had stood every test, and it was presented in the handsomest manner by the company to the government. Yet when it was done with it was thrown into the mud, and the company were never thanked for what they had done, nor employed to make other guns, because that would interfere with Sir William Armstrong. The Mersey Ironworks Company were now making excellent guns for foreign governments, and Captain Blakeley also was making guns for the Russians—offering, Englishmanlike, to back his weapon for a thousand guineas. Our government, he repeated, gave the cold shoulder to native talent, and that talent was now seeking a market elsewhere.

Reply of Lord Paget, an Admiral of the Navy, Secretary of the Admiralty, and its organ in the House of Commons.—March 10, 1864.

LORD C. PAGET. Vessels masted as she was have gone all over the world. What ground is there for the declamation against the admiralty—that there was a want of proper administration, and that if the admiralty had had a responsible head these things could not have happened? I will tell the house that the responsible officer who sent these vessels to sea was the Duke of Somerset, who is quite willing to take the responsibility for doing so. (Hear.) Now as to the Prince Consort there were reports that certain vessels in the Mersey would probably put to sea, and it was necessary that these ships should not be allowed to go. The Prince Consort was not unfitted. She was ready; and, moreover, the controller of the navy had expressed a wish that she should have a

trial at sea under steam. The crew was put on board—for under our present arrangements we can put a crew on board in 24 hours—and she went to sea. It is true that the men, having been only so short a time on board, did not know all the various arrangements of the vessel with respect to stores, and hatches, and matters of that sort; and, unfortunately, the moment she left Devonport there came on a very heavy gale of wind, and when she rounded the Land's End she experienced one of the heaviest gales that have been known for a great number of years. She rolled: I need not tell you that our armor ships do roll; it is a peculiarity of our armor ships that they do roll. Had she been in a long sea—had she been on the Atlantic, probably she would not have shipped any water, because we know that a long sea is better than those short seas which prevail in the channel for a large vessel like the Prince Consort. Well, she got into the Race of Holyhead, where, as every one knows, the sea boils. She did take in water in the Race of Holyhead; the water was over her engine-room, and matters began to look serious. (Hear, hear.) She came up to the south stack, but the captain, finding that he could not bear into Holyhead with safety, hauled his wind and made for Dublin. It so happened that for some time the vessel lay to; and while she lay to she did not take in water; but when her head was forced against the sea she took in water over her bows and over her sides; in fact, she shipped a great deal of water; and when they reached Dublin all on board were very glad (hear, hear,) and they got their pumps out and worked them. (Hear, hear.) It was found that the vessel had not leaked, but it was reported that there had been some straining. I will state what really was the case. We did not like to put scuppers high up on these armor ships, and the consequence was they were carried below, coming out under the armor plates in the Prince Consort; but the result proved to be, I believe, that there was no free escape for the water. Having found by experience that this plan of placing the scuppers is not a secure one, we have made a change, with the view of avoiding a recurrence of what took place in this instance. (Hear.) When the Prince Consort came back, wishing to see her with my own eyes, I went and saw her in dock. Nautical men know that if a vessel is strained, you can tell that by the streaks which appear on the copper of her bottom; but there was nothing like an appearance of straining about this vessel. (Hear, hear.) I had better inform the house that I shall not be understating the matter when I say that the cost of repairing the accident to the Prince Consort will be under £1,000. It is quite true that while she has been in dock we have laid out a great deal of money on her; but that has nothing to do with the gale, but is for work done to prevent galvanic action from taking place between the copper bottom and the iron plates. I do not suppose my honorable friend means that we should condemn one of the finest vessels in the English fleet. We have proved the Royal Oak, which is her sister ship in every respect. The Royal Oak is out in the channel squadron, and the captain reports that she is a first-rate sea-boat. I think that is an answer to my honorable friend with regard to the misfortune which happened to the Prince Consort. (Hear, hear.) With regard to the question of the honorable member for Bristol, I should have wished that my noble friend, the under-secretary of war, had an opportunity of answering the remarks of the honorable member, because we are not in charge of the manufacture of guns. All we do is to make requisitions on the War Office, and we grumble if we are not well served. (A laugh.) I do not disguise from the house that on several occasions we have been disposed to grumble at the armaments we have had to carry, but the honorable member seems to think that for some time past the Americans have had guns more efficient than ours, and carrying more effective projectiles. I must, however, inform him that for a great number of years we have had shells for every gun in our ships, our 32-pounders, our 68-pounders—in fact, for all our guns; and therefore we are not behind the Americans in that respect. (Hear.) I do not mean to deny that the Americans have attached more importance than we have to guns

for shells only, but this raises a very important point of dispute between the Americans and ourselves, which I am not now going to discuss. The Americans attach great importance to what they call "smashing effects," (a laugh, and "hear, hear,") but they do not estimate as we do that high rate of velocity which we strive to obtain in our guns. There is much to be said on both sides of this question, and I do not mean to enter on it; but ever since we obtained those shell guns we have attached much importance to guns of great range. Their guns have not the same range. The honorable member said that we had nothing but the old Brown Bess. He could not have attended to what I said in moving the navy estimates, or he would not have arrived at such a conclusion. I said on that occasion that the admiralty was not satisfied with the 110-pounder Armstrong; but while I said that, I did not say that we disapproved it. I frankly say that we do not like it; but I do not wish the honorable member to think that we condemn it entirely. (Hear.) This gun was used during the action at Kagosima. They had one on board the flag-ship, and the report of its performance was this—that the vent-pieces blew out, and that in one case the vent-piece did what was a great deal worse than blowing out—it jammed. The consequence was that the gun was *hors de combat* for some time—for about half an hour. But it is stated that its precision and range were extraordinary, and likewise that the precision in the bursting of its shells was something marvellous. That was the report from the flag-ship. On board the other ships they did not give so good a report. They said that the gun did not show very great precision. In fact, they condemned the 110-pounder Armstrong. On reading these reports I am disposed to admit that there are great defects in this gun; but, at the same time, I think that it has considerable advantages in respect of its extent of range. Still, we have not been satisfied, and consequently the Duke of Somerset within the last two years communicated to the War-Office—and he did so before the death of Lord Herbert—his earnest desire that there should be a good, wholesome, simple, smooth-bore gun for the navy. He said, "I shall be very glad to use Mr. Whitworth's guns and Captain Blakely's guns if they succeed; but meantime, while all these difficulties exist, let us at least have for the navy something simple which will pierce these armor-plates." Accordingly the War Office prepared drawings for a gun of this description. They were limited to 6½ tons, because we considered that that was the limit of the weight which sea-going ships should carry in their broadsides. The War Office said that for that weight they could give us a 9-inch gun, a smooth-bore, to carry a spherical shot weighing 100 pounds. With that gun we were satisfied, for the time, at all events. We have had very successful trials of it; that is to say, it has pierced 5½-inch plates; and accordingly we have made our requisition upon the War Office for a certain number of these guns for the armament of our ships. But we have not rested satisfied with this, and our very heavy ships, the *Minotaur* and the *Bellerophon*, will be armed, experimentally, with 300-pounders—that is to say, with 12-ton guns, carrying spherical shot of 150 pounds weight. The honorable member would say that Mr. Parrott's or Mr. Brook's guns were better than these. I am not prepared to say, upon the whole, whether they are or are not in advance of ours. As regards America, I give my honest opinion to this house that we are not in a position to say which country has the best of it. With regard to the French, my honest belief is that we are more advanced than they are. That is the state of the case, and if you ask any intelligent French officer I believe he will tell you the same. I know the French navy have tried breech-loading guns on board the *Magenta* and *Solferino*, but I likewise know that their officers do not like them, and I do not think those guns successful. (Hear.) By the courtesy of the American government we have been able to send an intelligent officer of the navy over to that country. He is looking at their gun manufactures, and I hope we shall have full information as to what guns the Americans prefer and what progress they have made. I can assure the

house, however, that in this matter of guns, notwithstanding what is said out of doors, it is very doubtful yet whether any country is much more advanced than we are. (Hear, hear.)

Sir F. Smith said that the honorable member (Mr. Berkeley) seemed to be under the impression that Mr. Whitworth had not had fair play. Now, having served for two years upon the ordnance committee, he could say that the whole case had been most closely investigated, both Mr. Whitworth and Sir W. Armstrong being examined; but the fact was, Mr. Whitworth never seemed to be ready with his guns for the trials that were thought necessary. Certainly the guns made by Sir William Armstrong had not answered as well as was expected. It was acknowledged before the committee by the first lord of the admiralty, and the commander-in-chief, that we had no gun of large calibre which was reliable. It was quite clear that the charge of the 110-pounder must be reduced if it was to be used as a breech-loader, and possibly it would have to be used as a shell gun, and not for shot. It would be a most unfortunate thing if one of these guns were to burst between decks in action; it would be difficult then to get the men to go on fighting with the other guns. He hoped the admiralty and the War Department would continue to give their attention to the improvement of this gun. (Hear, hear.) He had not the least doubt that if they would offer a suitable reward to any one who would make this 110-pounder a safe breech-loader, some mechanical genius would be found to do it. (Hear.)

[Editorial of the London Times, from the Evening Mail.]

If the question of the guns has yet to be solved, their story, at any rate, has been fairly and candidly told. On Thursday evening Lord Hartington explained the whole state of the case, and described without reserve or disguise the circumstances in which we are now placed. In a few words, we may say that our field ordnance is in as satisfactory a condition as could be expected during a period of endless invention and constant change; but that in ordnance for sea service we have made no progress commensurate with the actual exigencies of the time. We know, or at least we have persuaded ourselves, that armor-plating will be found ineffective against the artillery of the future; but, although we believe these guns to be producible, they have not yet been produced. Happily, however, we are in this respect no worse off than our neighbors, and there is, we hope, no reason to apprehend that our success will be long delayed.

Lord Hartington informed the house that all our field batteries were now completely armed with the Armstrong gun, and that these pieces "were now almost universally approved and liked by the troops who possessed them." He did not conceal the fact that this feeling had not always prevailed, but he stated unhesitatingly that experience and practice had brought our soldiers to a belief in the good and serviceable qualities of the gun. This being the case, it becomes satisfactory to hear that our supplies of this approved ordnance are abundant. Besides the guns actually in use, we have a large number in store, "and a considerable number in depot at Woolwich, ready to be sent out at any moment if required." Nor is this the whole of the story as regards the land service, for, in addition to the 12-pounders forming our field batteries, we have 20-pounders and 40-pounders also in large numbers, of which a very good report can be given. Of the 40-pounders, especially, Lord Hartington thought it was "impossible to speak too highly." We have good reason, therefore, to be satisfied with the state of things up to this point. Our field artillery is as well armed and provided as we could wish it to be, nor do we know of any foreign models superior to our own.

Here, however, terminates our success. For naval purposes we have no gun of which we can speak as we have spoken of the Armstrong field-piece, and

it is simply in default of any satisfactory substitute that the old 68-pounder holds its place. The only fresh introductions have been the 40-pounder above mentioned, and the 110-pounder, also on the Armstrong pattern; but the former of these, though formidable in position on the field, is ineffective against the armor of an iron-clad, and the latter is also powerless for this special purpose. It is a good and useful gun for either kinds of service, but it will not send its shot through the strong plating of a modern frigate. Consequently, as regards naval ordnance we have made little or no progress in adapting our armaments to the tactics of the day. The only guns actually carried by our ships are guns which could certainly not be relied upon for piercing the sides of a good iron-clad on the European model.

Nevertheless, though Lord Hartington made this free confession, and though he at once admitted, in introducing the subject, that he could not say as much as he should wish to say for the actual state of things, he did mention two circumstances which render the result less unsatisfactory than it would otherwise have been. In the first place, he distinctly asserted, what we have repeatedly surmised, that such a gun as we were now in search of for sea service had not been produced in any other country. To appreciate the importance of this statement, we must remember that government has been diligently seeking information in other countries, and especially in America, respecting the progress made in artillery, and that the department which Lord Hartington represents must be presumed to be well acquainted with all that has been done abroad or at home. Now, his words leave no doubt about the intelligence received. "If," said he, "we have not got a gun capable of making effectual practice on iron-plated ships, we have reason to believe, nay we feel perfectly certain, from all the information we can obtain, that no other nation has in its service such an arm." This, therefore, decides the question of our relative position. We are not behind the world in this matter. Other countries are just as much at fault as we are. The desired gun has yet to be produced, and the next piece of consolation is that we are likely to produce it at least as soon as our rivals.

It is now stated, on the authority of the War Department, that our experiments have, at any rate, conducted us to a satisfactory "system of construction." In other words, though we have not yet got a gun with all the power which we desire, we know how to set about getting it. We have arrived at certain principles of manufacture which will give us the result proposed. We have discovered the proper material and the proper method of manipulating it, and therefore we can proceed to make guns "fulfilling all the conditions we require in a rifled gun, and strong enough to pierce any target yet manufactured." This, however, is clearly more than half the battle. If nothing is now required beyond the application of principles already ascertained, the rest of the work ought to admit of easy expedition in a country like ours. It will probably, indeed, be asked why, if so much has been done, so much should still be left undone. Assuming that we know exactly what gun we want and how to make it, our arsenals ought to be very quickly supplied with the finished article. But it is plain that our authorities are fearful of committing themselves to another mistake. They made a mistake with the 110-pounders, having ordered them in large quantities, "without any very mature consideration or very extended system of experiment," and having then found themselves with an imperfect article on hand. So now they are timorous and circumspect, and though they believe that the 600-pounder 13-inch gun recently produced is really successful, they are afraid to give large orders for so costly an implement until they have felt their way a little further.

This hesitation is natural, but it may be carried too far. It must not be forgotten that at present we have really no effective gun for sea service; and though it may be perfectly prudent to extend our experiments before definitely adopting the pattern proposed, it will be equally prudent to lose no time in

obtaining the assurance still desirable. Nor can we omit to observe that even the adoption of this formidable model will still leave us with much to do, for it is by no means certain that we possess ships which can carry cannon of such enormous weight. It is true that our naval architects express themselves confidently on this point, and undertake to find vessels for any guns which artillerymen can produce; but, at any rate, this work has to be done, and when the gun is forthcoming the ship will have to be built. This, however, is the real state of the gun question at present, and it is much as Lord Hartington described it—not a satisfactory state, and yet not one which need create alarm or provoke complaint. We find ourselves in a perpetual dilemma. If we act “energetically,” in the “reconstruction” of our artillery, we expose ourselves to the chance of getting a huge store of expensive and unsatisfactory guns; if we hesitate to decide, and accumulate experiments upon experiments, we remain without any guns at all. There is a middle course, no doubt, in this as in most other cases, but it is very hard to hit. All we can say is that under these difficulties we have been successful in creating a field artillery, and that in creating a marine artillery we have not been more unsuccessful than other people.

These present to the committee a fair view of the *progress and present condition of heavy rifled cannon in England*, after an enormous expenditure, (Mr. Berkeley says fifteen millions of dollars,) and must be accepted as authoritative, coming as they do from the highest official sources, and intended to satisfy Parliament of the necessity of adding to an outlay already sufficient, one would think, to have decided, experimentally, the whole question of rifled ordnance from beginning to end.

The statements made concerning the rifled cannon of other countries is, of course, to be taken with qualification.

The committee will perceive that whatever may be assumed in favor of what we or other nations may have of heavy rifled cannon, nothing of the kind is yet in existence which is at all satisfactory or reliable. While, therefore, it is indispensable to place *some* on shipboard, the number will properly be limited to the *minimum*.

Efforts have not been wanting here to investigate this difficult subject, and to provide some kinds of rifled cannon for our navy.

The solution of the question is, at least, quite as advanced here as in other countries, which is precisely the consolation that the British authorities are compelled to be satisfied with, poor as it is, though we have not spent fifteen millions for what we do know.

It was my wish to have entered upon the investigation of this subject long before I was allowed to do so. And in 1856 I submitted a draught of a 10-inch rifle cannon to the Bureau of Ordnance, but it was not until the results with the Armstrong gun had attracted general attention that the necessary consent was given me, and then on a scale too contracted to be satisfactory.

In December, 1860, I sent to the Bureau of Ordnance a statement of results,* from which it will be seen that though the time allowed me had been very brief, I had been able to reach a satisfactory conclusion in regard to light rifle artillery. The pieces of this class have been used exclusively in the navy ever since, and have stood the ordeal of the whole war. The iron cannon were the 50-pounder, 80-pounder, and 150-pounder. All of these were completed, as far as the interior construction was concerned, and had great accuracy, particularly the 150-pounder. But the 50-pounder alone had the necessary endurance, being the only class that I had been able to carry through the process of casting entirely under my own direction. How far I should have succeeded with the heavier guns I am unable to say, for the outbreak of the rebellion compelled

* Printed by order of House of Representatives, 36th Congress, 2d session, Ex. Doc. No. 43.

my attention to other duties. The same exigency unavoidably precipitated us headlong into all the embarrassment of resorting to imperfect rifle ordnance for service afloat, and large numbers were ordered at once of such as could be had most conveniently, and to such an extent that I doubt if any naval service has half the number afloat.

The true causes that have interposed to delay the introduction of rifled cannon into ships-of-war, and do now prevent their greater and perhaps exclusive use, are comprised in the fact that there is no heavy rifled cannon now known which will fully and safely combine the indispensable conditions of service. The committee will, no doubt, be told differently, but I feel assured that my opinions in this respect are well based.

Fourth. The committee further expresses its wish to obtain from witnesses their opinion upon the subject of ordnance generally, so as to enable the committee and Congress to come to an intelligent conclusion in reference to the subject of heavy ordnance.

The very general remarks just made will afford a clue to the committee in arriving at conclusions as regards rifle cannon.

Of smooth-bore cannon there is no difficulty whatever in obtaining any kind or calibre that may be needed. The hindrance is in not knowing what work is to be done, and, therefore, what kinds of cannon are needed.

The smooth-bore cannon of the navy are the 9 inch and 11-inch guns, which, though designed chiefly for shells, are strong enough to bear shot with charges of 13 pounds and 30 pounds of powder, respectively. Besides these, I have designed three classes of guns to meet the possible solution of the iron-clad problem.

First. The 15-inch gun used in the turrets of monitors, and cast on the method of Major Rodman.

Second. The 13-inch, of 34,000 pounds, which throws a shot of 280 pounds, with fifty pounds of powder, has not been in action yet, but one of them has been proved to 500 fires, which I look on as very satisfactory.

Third. A 130-pounder, throwing a shot with thirty pounds, and even forty pounds of powder, it has pierced six inches of iron at 200 yards.

These seem to embrace the elements of ordnance power in all the various combinations that are sought by theorists or experts.

In one the momentum is produced by *maximum weight* and *minimum velocity*; in another by *minimum weight* and *maximum velocity*; and the third is a *mean* to these extremes.

One or the other will certainly answer the purpose. The 15-inch has already exhibited serviceable qualities, requiring but a few minutes to decide the fate of the Atlanta, and doing good service, from the monitors under my command, on Wagner, Sumter, and Moultrie.

But shall these facts decide that the 13-inch would not have been as effective for the same purpose; and more so, perhaps, for other and different purposes? Or, that the 10-inch might not combine a more general efficiency?

In some cases, I am satisfied, from considerable experience, that monitors armed even with 11-inch guns would be more effective than with the 15-inch or 13-inch. Thus it is, in operating against open earthworks, when the chief object is to silence their cannon and drive the men from the guns, for which purpose rapidity of fire is most desirable.

During the whole of the naval operations against Wagner it was manifest that the eight guns in the broadside of the Ironsides told more powerfully than the same number of guns in the monitors; not because of any advantage in the style of vessel, but because the 11-inch gun could be fired faster than the 15-inch gun.

Among other conditions, upon which the committee have desired an opinion, are those of *range and accuracy*.

These are generally associated, but are by no means synonymous.

Accuracy is always necessary, and range only desirable when accurate. It may not only be possessed without accuracy, but beyond certain limits cannot be accurate. And to this I beg the attention of the committee, for it is a fact, that beyond certain distances it is not possible to hit the object fired at *sufficiently often* or with *sufficient force* to produce any useful effect; which will explain the contradictory opinions which are so often heard.

You will be told, for instance, that one gun will throw its shot ten thousand yards, (six miles;) but it is not stated, at the same time, that the objects which are likely to be subjected to the fire of artillery are imperceptible over the sights of a cannon, when so distant, and that at six miles it would hardly be possible to hit a ship or a fort once in a hundred fires—both being fixed objects; but if the ship is moving, the chances of her hitting or being hit are decreased enormously; and if two ships are in movement and firing at each other, to hit may be considered impossible.

The chances of striking, and of striking effectively, increase as the distances decrease; and the question naturally arises, what is the distance at which artillery fire does become efficient?

Nelson, and Perry, and Hull, with their solid shot of twenty-four and thirty-two pounds, would have told you one hundred or three hundred yards; with 9-inch and 11-inch shell guns, this might be extended to 1,000 and 1,300 yards; and so far as wooden ships, in motion, only are concerned, it may be questionable whether rifled cannon would be more destructive at the latter distance than smooth-bores of like calibre.

If the objects were at rest, afloat, or ashore, the power of inflicting certain damage, total or partial, might be extended to 2,000 yards, and, with some few exceptions, I should be inclined, from present experience, to limit artillery fire to this distance.

But whatever may be the limit of effective fire, I would not sacrifice an iota of power *within* that limit, merely to *extend the range* to any point *beyond* it.

It is of no consequence, therefore, whether a gun can throw four miles, or five miles, or six miles; the question is, *what accuracy and power* has it at the distance where any gun is effective—that is, will inflict certain damage within reasonable time.

Until the latter is ascertained, the other is not worth notice. It is the vision of an enthusiast, or the sophistry of an interested party.

Again, the effective distance for naval artillery is modified by the introduction of iron-clad ships; and here arises a serious complication; it is in fact the vexed question of the day.

Two hundred yards are generally used in the English experiments, but I presume the great inventors would not be willing to admit their cannon to be inoperative beyond this limited scope.

Of course, if a gun is good for anything in such service, it should penetrate at two hundred yards. But what shall it penetrate? Four inches, or five inches, or six inches of iron on broadside ships, or ten inches and 15 inches of iron turret, like the monitors?

Millions of dollars have been spent to decide this; and only the other day, after a multitude of costly experiments in England, it resulted, from some trial, that previous decisions in favor of more iron and less wood were erroneous, and a reversal of judgment became indispensable.

The artillerist, therefore, must wait on the ship-builder in order to settle many primary conditions for his gun.

The constructor was first driven to iron armor because of the introduction of shells; in turn, he compels the ordnance officer to revert to solid shot, and even

holds the final decision in abeyance, as to the kind of shot, until he determines on the armor which is most advisable.

Without discussing this, but merely assuming that the distance usually practiced at *may* be the effective distance, (not the possible, but the certain distance,) please to note its unavoidable influence. At 800 or 1,000 yards, or 1,500 and 2,000 yards, it was indispensable to have *accuracy* as well as *power*; but at 200 yards we need *power* alone. One cannot fail to hit, for the development of power sufficient to pierce iron at 200 yards will always confer sufficient accuracy for that distance; in fact, there is little or no divergence then with any respectable cannon. If the determination of the problem should so result finally, the committee will perceive that it will operate directly upon the use of very heavy rifle cannon in armored ships; for if the accuracy of smooth-bored cannon is sufficient for effect upon iron-clads at the limited distances, where penetration is certain, then rifle cannon will no longer be indispensable on account of their *accuracy*, but the choice between them and smooth guns must be determined entirely by the *power* which either can exercise with the greatest degree of effect, safety, and convenience.

The committee will find, accordingly, that the experimental practice in England is influenced by these considerations, admitting them *in fact* if not in terms; for on such occasions smooth-bored cannon are brought forward as often as rifled, and it is now announced that heavy smooth-bore 9-inch guns will be adopted for the armament of the last great armored British ship, (Achilles,) thus adopting the United States peculiar calibre for a gun of greater weight.

If this is done, then will that British broadside be clearly inferior to our own, in case the 10-inch of 16,000 pounds, already referred to, is chosen by our own authorities.

The committee will perceive, from what I have stated, that nothing is certain in ordnance, except that all previous conclusions and systems are likely to be abandoned; but what shall replace them no man can say.

As the best artillerists have been unable to arrive at any conclusion, it is not surprising that men of eminent abilities in other pursuits should step in to settle the difficulty; but the results of Armstrong and Whitworth give no promise that skilful engineers and mechanics are likely to succeed better than artillerists.

The *durability* of cannon will depend entirely on the style of ordnance that it will become necessary to adopt; if rifle cannon of large calibre, then must the question be answered by better results than have yet been attained.

We have nothing now to warrant the belief that such can be obtained with uniform endurance by means of any process of fabrication yet tried; neither cast-iron, nor cast-iron banded with wrought-iron, (like the Blakeley,) nor wrought-iron solid or built up, (like the Armstrong and Whitworth,) have furnished series of large rifle cannon, capable of uniform and sufficient strength.

The English admit that the skill of Armstrong has not carried them beyond the 40-pounder; Whitworth has not been able to obtain the confidence of the government sufficiently to introduce his gun at all; I can myself bear witness to the inefficiency of three of his 70-pounders—one tried at the experimental battery here, and two placed in the naval battery on Morris island to play on Sumter—all becoming dangerous after *very* limited firing.

On the other hand, if smooth-bore guns are to be used, there will be no difficulty in making them of proper strength.

Only one positive recommendation would I make upon this subject, which is, that none but absolutely cold-blast iron shall be used in the manufacture of iron cannon, and that all iron smelted with a blast, warmed in the least degree, shall be prohibited in the most explicit terms.

Excellent cannon have been made of some kinds of warm-blast iron used by some founders; but, on the other hand, there is such a latitude of carelessness or design in the use of warm blast, that a wider door is opened for abuse, so that

it is in all respects most advisable to adhere to *absolutely* cold-blast iron; it has been the rule for many years, but never closely followed, and the sooner we return to it the better it will be for the interests of ordnance.

I would also recommend as the only aid which legislation can give in the matter, that the Navy Department be authorized to purchase the right of use or the possession of iron mines of suitable quality, and to have the ores smelted by its own ordnance workmen; this will be a move in the right direction, and will, I feel certain, insure the best material for fabricating cannon. It would also facilitate the general investigation of this subject.

The committee desire to be informed in regard to the payment of a royalty for the use of invention. For myself, I can say, I have never received anything of the kind, though the arm was, for a long period, of my invention, and still is, so far as smooth-bores are concerned, and are entirely so as regards the smooth and rifled light artillery of the navy, (12-pounder and 20-pounder.)

The above paper has been drawn under circumstances of great affliction, which will, I am sure, plead strongly for its imperfection.

I have the honor to be, very respectfully, your obedient servant,

JNO. A. DAHLGREN,

Rear Admiral, Com'dg South Atlantic Blockading Squadron.

Hon. B. F. WADE,

Chairman of Committee on Conduct of the War, U. S. Senate.

NAVY DEPARTMENT, May 3, 1864.

SIR: I have the honor to acknowledge the receipt of your letter of the 2d instant, stating that the Committee on the Conduct of the War, having under consideration the use of heavy ordnance in our fortifications and navy, request to be furnished with any information on the files of this department touching the subject.

In compliance with the request of the committee, I transmit herewith a memorandum embracing data taken from the records of, and furnished by, the Bureau of Ordnance, respecting the origin of the 15-inch guns.

Very respectfully, &c., &c.,

GIDEON WELLES,

Secretary of the Navy.

Hon. B. F. WADE,

Chairman of Committee on Conduct of the War.

Memorandum from the Navy Department.

In reference to the question as to the origin of the 15-inch guns, the following data are taken from the records of the Bureau of Ordnance:

(1.) March 17, 1862, the department informs the bureau that it "requires for the class of vessels like the 'Monitor' at least 20 15-inch guns; and for another class, at least 10 of 20 inches diameter;" and directs that "immediate measures to produce these guns in the least possible time" be taken. It also required the bureau to "recommend to the department whether or not a gun of less than the usual length should be used."

(2.) Under date of March 19, 1862, the bureau received a communication from Admiral Dahlgren, acknowledging the receipt of a copy of the letter from the department to the bureau in regard to the fabrication of 15-inch and 20-inch guns for ironclad vessels, in which he says:

"A subject so important cannot be perfected without much reflection and extensive experiment. But we lack almost the preliminary information indispensable to commence with."

"Wherefore, to meet the requirements of the Navy Department, the fabrication of these guns should be conducted with great care, and extreme proof must also be resorted to in several cases in order to determine the course of proceeding needed to ensure a proper endurance.

"I confess myself, however, averse to this hasty mode of proceeding.

"Using all despatch, it would be impossible to fabricate the first 15-inch gun in less than seventy or eighty days, whilst the present urgent necessity must pass away in the third of that time, and cannot arise again for a considerably larger period—having reference, of course, to foreign nations.

"The plan I should prefer would be: 1st. To place 11-inch guns in all the turrets until the heavier ordnance were fully prepared. 2d. Construct proper targets to ascertain what size and kind of projectile is needed to pierce, injure, or destroy plates of the thickness in use or likely to be used. 3d. Fabricate guns of the size thus indicated, *whatever be the calibre*, using the form and process needed to give uniform and proper endurance."

(3.) March 20, 1862, the bureau acknowledged the receipt of this letter, and directed him [Admiral Dahlgren] to prepare targets to be fired at.

(4.) March 26, 1862, Admiral Dahlgren forwards to the bureau a sketch of the 15-inch gun, made to conform to the length required by Captain Ericsson.

(5.) April 4, 1862, the bureau informed Admiral Dahlgren that this sketch had been forwarded to Captain Ericsson, and that an agreement had been entered into with the Fort Pitt foundry to make 50 15-inch guns, the preparations for which were being urged forward for casting as soon as practicable, and requesting him to forward drawings for the casting.

(6.) April 4, 1862, Admiral Dahlgren forwards another sketch, "adapted as near as possible to the dimensions required by Captain Ericsson."

(7.) Under date of April 7, 1862, he writes to the bureau on the subject, as follows:

"In compliance with the directions contained in a communication from the Navy Department to the bureau of March 17, 1862, and of the bureau to me, dated April 4, 1862, I transmit herewith the draught of a 15-inch gun, the dimensions of which have been restricted, as far as possible, to the requirements of the turrets in which they are to be placed.

"It is proper for me to remind the bureau that this can only be considered as an experiment on a large scale, unsupported by any of the data usually considered important to the introduction of new ordnance, and for a piece of this size indispensable.

"Circumstances, however, seem to impose the necessity of proceeding without full experiment, and I feel it my duty to meet the views of the Navy Department to the best of my ability.

"I shall, therefore, in the first place, adhere as closely as possible to the method practiced in manufacturing the only 15-inch gun yet made, and request that, in making the gun which I now transmit, the founder shall use the same kind of iron as was used for the present 15-inch, the same grades of that iron, the same process of casting, and shall produce the same tensile strength, density, and other characteristics."

(8.) April 9, 1862, in reply to a letter from the bureau, the admiral states that "it was not my (his) intention to have *all* of the 15-inch guns cast in the same

way, but only those which would be needed before any experiments could be instituted."

9. May 13, 1862, he transmits draught of 20-inch gun, "as desired by the Navy Department," and speaks of it as an untried experiment.

10. May 13, 1862. The bureau addressed the Navy Department on the subject of these guns; and Commodore Harwood reminds the department that on the 20th March, 1862, he "submitted to it a detailed opinion of Commander Dahlgren on the subject of the fabrication of guns of increased calibre;" and after expressing his own views, concludes by saying: "The department is aware that there is more difficulty in making *safe* large cast-iron guns than small ones, and that especially in close iron-clad turrets the consequences of explosion would be disastrous in the extreme, and the demoralizing effect upon the service at large worse than the disaster itself. I hope the immunity from accidents by explosion of naval guns during the rebellion will be my excuse for requesting the department to adhere to the proposition referred to it on the 20th March."

11. May 13, 1862. In a letter to Admiral Dahlgren, Commodore Harwood says: "I had already explained personally and by letter the difficulties attending such an unusual and large increase of calibre, and as I understand the Secretary of the Navy has been furnished with a copy of your letter of the 13th to the bureau, the question may be considered as fairly before him."

The 15-inch guns were cast, and, as designed by the department, were placed in the turrets of the "monitors," but so little reliance upon their endurance was felt by the admiral, that while chief of the Bureau of Ordnance, under date of January 5, 1863, he issued to the navy the following circular:

[Memorandum No. 6.]

BUREAU OF ORDNANCE, NAVY DEPARTMENT,
Washington City, January 5, 1863.

The bureau deems it indispensable to draw the attention of officers concerned to the use which may be made of the 15-inch guns.

It is the first time that cannon so large have been brought into the service of any navy, and the extent to which they may be safely fired is by no means finally ascertained. One of them has endured two hundred and sixty rounds, chiefly with shell, and exhibits no sign of weakness.

The consequences of rupturing such a piece in an iron-clad turret would be immediately fatal to every one near, and very probably to the vessel itself.

In order, therefore, to economize the use to which these ordnance should be put, and to husband their assured powers for present special purposes, care must be taken:

First. Only to fire solid shot from the 15-inch gun when iron-cladding or other equally resisting objects are under fire.

Second. In action, on other occasions, to use the lowest charges that will serve, and with all the *deliberation* required to strike with accuracy.

Third. Not to fire out of action, unless when required occasionally to verify the working of the machinery.

Fourth. To use the 11-inch gun whenever it will perform the work efficiently.

Fifth. To examine the interior of the vent, and of the gun about the charge; the more frequently also as the use of the gun progresses, or if many shot be used.

Thirty-five pounds of good cannon-powder, grain of ordinary size, and the initial velocity 1,400 to 1,500 feet, is the highest charge that is to be used with the shell.

If there had been time to make sure of the full endurance of this class of guns, it would have been ascertained by firing to the extreme; but the pressing

and instant necessity for their employment left no alternative. All has been done that was possible to make them serviceable, and now it only remains to use them with the utmost prudence.

JNO. A. DAHLGREN,
Chief of Bureau of Ordnance.

Finally, as articles frequently appeared in the newspapers condemning the 15-inch guns and censuring the Bureau of Ordnance for introducing them into service, Mr. Fox, the Assistant Secretary of the Navy, published the following letter in the New York Times :

"NAVY DEPARTMENT, *Thursday, May 28, 1862.*

"*To the Editor of the New York Times :*

"Several days since an article appeared in your paper (and similar articles have appeared in other papers) censuring the Naval Ordnance Bureau for introducing the 15-inch calibre into the navy. I cannot say what influenced the Secretary of the Navy to adopt this heavy calibre, but I know that the distinguished chief of the Bureau of Ordnance, Rear-Admiral Dahlgren, did not advise it. Whatever responsibility attaches to those who strenuously urged it belongs to me, and not to the admiral.

"Very respectfully,

"G. V. FOX, *Assistant Secretary.*"

It was not very long, however, before the judgment of the advocates of the 15-inch gun was signally vindicated in actual battle by the capture of the Atlanta (iron-clad.) And the department's appreciation of the victory thus gained through the agency of the new gun was expressed in its official letter of thanks to Commodore Rodgers, under date of June 25, 1863, and in which occurs also the following passage :

"For inland operations the monitor turret was immediately adopted, and the 15-inch gun of Rodman, being the only gun of greater weight than the 11 inch yet tested, was ordered to be placed in the turrets of the vessels that were constructing."

This letter was published in all the newspapers of the day.

Under date of June 29, 1863, Admiral Dahlgren addressed the following letter to the department :

"NEW YORK, *June 29, 1863.*

"SIR: In the well deserved complimentary letter of the department to Captain Rodgers, I note the following expression :

"'For inland operations the monitor turret was immediately adopted, and the 15-inch gun of Rodman, &c., was ordered to be placed in the turrets of the vessels that were constructing.'

"I beg leave to state that the 15-inch gun carried by the Weekawken in her late contest with the Atlanta, as well as all the guns of the same class in the new monitors, was designed by my direction and under my own eye. It conforms to the same principles of form and general construction as were followed in the 9-inch and 11-inch guns of the navy, modified so far only as was necessary to adapt them to the diameter of the turret.

"When the gun was manufactured, the cooling process invented by Captain Rodman was used by the founder.

"A copy of the letter sent by me to the Bureau of Ordnance with the draught of the gun is herewith enclosed.

"I have the honor to be, &c.,

"JOHN A. DAHLGREN, *Rear-Admiral.*

"Hon. GIDEON WELLES,

"*Secretary of the Navy.*"

To this letter the Navy Department replied on the 9th July, as follows :

"SIR : I have your letter of the 29th ultimo, relative to the 15-inch guns in the turret of the Weehawken, and other iron-clads, alluded to in the letter to Captain Rodgers, and therein styled the 'gun of Rodman.'

"I had supposed you were unwilling to take the paternity of the 15-inch gun, from all the conversations we have had, and there was consequently some embarrassment in defining the piece, and relieving you of responsibility. It was a part of the original plan of Mr. Ericsson, as you are aware, to have guns of a large calibre in the turrets ; but your opinion was against it, and you were unwilling to take the responsibility of recommending the 15-inch gun. But others, and particularly the Assistant Secretary, adopting Mr. Ericsson's suggestions, earnestly advocated it, and it was decided that the experiment should be made.

"Under this decision the Ordnance Bureau took the necessary measures to have them built, and you, as stated in your letter, designed the pattern, making it to conform to the diameter of the turret. I supposed you wished it distinctly understood that you were acting under orders, and that this turret 15-inch gun was not a Dahlgren, and that you were in no way responsible for its success or failure.

"The form of gun is after your design, but you had made no guns of that calibre. Rodman had, and, as you observe, 'when the gun was manufactured, the cooling process invented by Captain Rodman was used by the founder.'

"Strictly, perhaps, it is neither a Dahlgren nor Rodman. As, however, you had never identified your name with a 15-inch gun, but had expressly disclaimed it, while Rodman had designed them, it seemed proper that allusion to him should be made, to relieve you quite as much as to identify him. The particular gun had its origin in Mr. Ericsson's invention, which made it a necessity, and was ordered by the department irrespective of inventors.

"There was no intention to do injustice to either, I assure you, in the allusion made to the gun in the letter to Captain Rodgers.

"Very respectfully, &c.,

"GIDEON WELLES,
"Secretary of the Navy."

As a substitute for the 15-inch guns, Rear-Admiral Dahlgren designed the 13-inch guns ; and these were also to have the "teat chamber" adopted by him in the 15-inch and other guns.

Trial guns of this calibre, and cast *solid*, were made by the Fort Pitt foundry, and the Builders' Iron-works at Providence, Rhode Island, while at the same time similar trial guns were cast at the Reading foundry, but *hollow*, and on the Rodman plan. In proof, the trial gun at Fort Pitt, and the one at Providence, gave way after a few rounds. The *hollow* cast gun, however, made at Reading, did not give way at five hundred rounds.

Now, the demand at this time for guns for the monitors was most urgent. To wait for experimental results with the 13-inch guns was out of the question, while, at the same time, it was found necessary to reduce the opening of the ports in the turrets as much as possible, and to permit the muzzle of the gun to *protrude through them*, thus doing away with the troublesome smoke-box hitherto used, and which was indispensable with the shortened 15-inch gun originally designed.

During this dilemma it also became apparent, from repeated results with the "teat chamber," that it was not only most inconvenient in service, but it really hastened the rupture of the gun instead of preventing it.

It thus became necessary to act—and promptly, too.

Therefore the present chief of the Ordnance Bureau *ad interim* directed the

first 15-inch cast for the navy, and which was then undergoing a series of experimental firing at the ordnance yards in this city, to be placed upon the last the "test chamber" reamed out, so as to leave a chamber nearly parabolic form, and to reduce the diameter of the chase and muzzle to correspond with that of the model of the 13-inch gun.

The result was most satisfactory; the gun enduring heavy charges of 50, and two of 70 pounds of ordinary cannon powder, with shells and shot, the latter weighing 440 pounds, and did not give way until it had reached near 900 rounds.

This was decisive. The order was immediately given to rechamber and to down in the same way all the original 15-inch guns, and to cast as soon as possible a lot of these guns on the new pattern.

NEW YORK, April 20, 1864.

SIR: I enclose copy of the plan of a twenty-foot diameter turret with ten 15-inch guns, which I forwarded to you on the 22d of March, 1862. With reference to these guns I have to state, that the calibre was determined by yourself, and that the outline and proportions were made to correspond as near as possible with the 11-inch Dahlgren gun.

I am, sir, respectfully, your obedient servant,

J. ERICSSON.

Hon. G. V. Fox,

Assistant Secretary of the Navy, Washington.

Testimony of Horatio Ames.

WASHINGTON, January 13, 1865.

Mr. HORATIO AMES sworn and examined.

By Mr. Gooch:

Question. What is your place of residence, and what is your occupation?

Answer. I live in Salisbury, Connecticut, and my business is that of a manufacturer of iron; lately a manufacturer of iron guns.

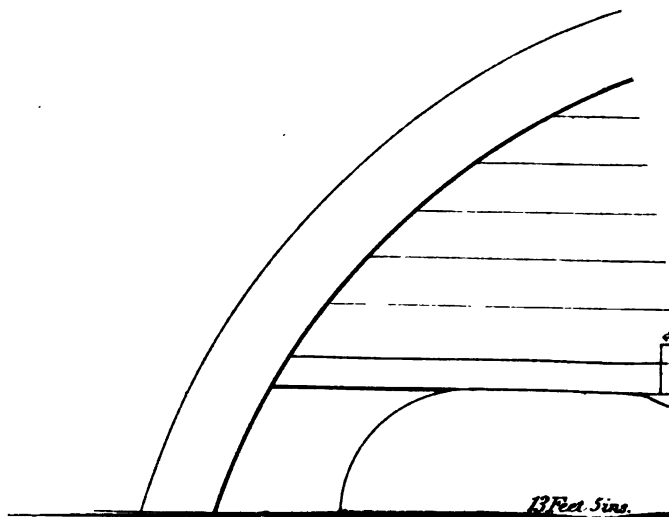
Question. Have you ever made any cannon or heavy ordnance for the government?

Answer. Yes, sir.

Question. Will you describe the guns you have made for the government, and give all the particulars in relation to them, and what has been done with them?

Answer. In 1861 I had an order from the Navy Department for five wrought-iron cannon, (50-pounders,) as an experiment, the department assuring me that if I succeeded in producing a wrought-iron gun that would stand the test, I should have all I could make. In the spring of 1862 I delivered the first gun, which was fired under the direction of Admiral Dahlgren. It was fired 1,630 times and is but little injured. On this result he ordered me to send another gun here, which I did. Dahlgren had this gun bored out from a 50 to an 80-pounder; said gun was in all respects like the first one. This last gun was then fired, with 80-pounder charges, 438 times. He, Dahlgren, then took the five guns ordered, and another of the same class, and paid me for them, but declined giving me further orders on account of the price. Yet he had all the time told me he must have them at any price, if they were better; and at the same time offering me one dollar per pound for one gun of a different calibre, so that I should be worried out by the delays in proof and augmenting expense, in making but one gun at a time. I all the time insisted that were my gun a success, I should have sufficient quantity to keep my works employed. These two guns

*COPY of a PLAN forwarded to the
by J. Ericsson, on the 22^d of March. 18*



were examined by Captain Benton, of the ordnance department, in the spring of 1863, and pronounced good.

In September, 1863, I took an order from the President for 15 guns, to be not less than 100-pounder calibre, with a tacit understanding that I should make the largest gun I could with my present works. I concluded to make a 7-inch calibre gun, which is called a 125-pounder. This gun was finished and ready to fire the 1st September last, and we began to fire it on the 15th September. We used the strongest cannon powder, (No. 7,) and Hetchkiss shot. It was fired with a few charges of 13 to 19 pounds powder for about 30 times. It was then fired with 19 pounds powder about 400 times. It was then increased to 25 pounds powder, and fired with high elevation 200 times, and also a few charges of 30 pounds. It was fired 700 times by the board, consisting of Major General Gillmore, Commodore T. A. Hunt, and Major Laidley. They reported to the President, at the end of the test, "that it was the longest range gun known, the strongest gun, both lengthwise, and the most enduring gun known." It was the opinion of the board that any ten fires from a Parrott gun, charged as my gun was, and with the same elevation, would burst it. The committee also recommended that this gun should be bored out to an 8-inch gun, or a 200-pounder, and be subjected to a further test, with a view to burst or destroy it; and then that it be cut in half and examined, as to how the iron in the gun had been affected. The gun is now being bored out at my works, and will soon be ready for further proof.

These guns are made wholly of wrought-iron, being worked so that the iron is all made fibrous. It is then bent and welded into rings or hoops six inches wide and of proper thickness, which rings are turned and bored so that each ring is fitted perfectly into the other, to make a cross section of the gun of the proper diameter for the gun when forged. The gun is then forged, (the breech port,) and these rings are heated in one furnace, and the but end of the gun in another. When both are at the proper heat they are brought together by the aid of cranes and tongs, and welded by a horizontal hammer or steam ram. At the same time an upright hammer hammers the iron so as to make the iron close and sound. The seeming great expense of the gun consists in the labor and waste of iron in working the iron over so much and the fitting of the rings.

I believe there is no gun ever made worth a fiftieth part as much as this gun. It will throw a 125-pound shot seven miles, which enables you to reach the enemy before he can reach you; and the gun will not burst by any charge of powder you choose to fire. Nor does its safety depend on such things as a shell bursting in the gun, or the ball not being rammed home.

Cast-iron will not stand for rifled guns; it is the cheapest but most unreliable metal known—granulous and brittle in all respects. A cannon is a hoop. Who ever thought of using a cast-iron hoop? The report of the board who tried my gun gives a true account of the test and worth of my gun better than I can describe it here.

Question. What was the price of the guns you delivered to the government?

Answer. I charged seventy-five cents per pound.

Question. At what price can you make those guns now?

Answer. Iron, labor, and everything have risen in price a great deal. The guns I made under the order from the President were eighty-five cents a pound. I can make such guns now at a dollar a pound.

By the chairman:

Question. Were those guns rifled?

Answer. Yes, sir.

By Mr. Gooch:

Question. How many large guns have you made in all?

Answer. I have made the fifteen for the President, and six for Admiral Dahlgren.



Question. How many of your guns have been tested?

Answer. All but four. Admiral Dahlgren tested two; one was fired 1,630 times, what was called "extreme proof," and they stopped firing it. He then ordered another one to be bored out from 5½ to 6 inches diameter, and he then fired that gun until he found he could not burst it and then stopped firing.

Question. What was the weight of the guns delivered to Admiral Dahlgren?

Answer. About 5,500 pounds.

Question. What is the weight of the guns which you made under the order of the President?

Answer. 19,500 pounds.

Question. Do you know the number of times the department have felt it safe to fire the heavy cast-iron guns?

Answer. They do not fire any such charges of powder as they fire in my guns, and at no such elevations.

Question. How does the charge of powder in the cast-iron gun compare with the charge in your gun?

Answer. We use as much again powder in proportion. The charge for the Parrott gun is one-tenth the weight of the shot; our charge is one-fifth. But the Parrott guns do not have much elevation, while ours have a great deal, which makes as much difference as the difference in the charge.

Question. Do you know where is the report of the commission of which you have already spoken?

Answer. It is with General Dyer, chief of ordnance.

Question. How long since was that report submitted to the Ordnance Department?

Answer. About the 10th or 12th of November.

Question. Have you had any interviews with the chief of the Ordnance Department in relation to the management of those guns since that time?

Answer. Yes, sir.

Question. What has been the result of your interviews?

Answer. I asked him for more orders, as I had worked out all my orders. The reply was that they could not give me any orders until my new guns had been fired. They wanted to try them further.

Question. Were the guns ready?

Answer. Yes, sir.

Question. Why did they not go on with the experiments?

Answer. They said they had no star-gauge to measure the bore of the gun. They measure the bore of a gun by a star-gauge, to see whether there is any defect in it. The star-gauge came to my place last Saturday. But Commodore Hunt was ordered here, and is now here on a commission. He had before been detailed to fire the guns I have on hand. Some of my guns have been ready since the first of November. They are not to be fired now until the first of February, if they are to be fired then.

Question. With that star-gauge, could they not have tested some of those guns as the other guns have been tested?

Answer. Yes, sir.

Question. They could have tested the range of those guns at any time, could they not?

Answer. They do not propose to fire those guns; they are satisfied that they will not burst. But it is a rule to fire each gun ten times.

Question. And then they examine them with the star-gauge?

Answer. Yes, sir; the difficulty seems to be to get anybody to do it.

Question. How fast could you deliver those guns, such as you made under your order from the President?

Answer. I could deliver one a week.

Question. How fast could you deliver the smaller guns, such as you made for Admiral Dahlgren?

Answer. Two or three a week.

Question. Could you deliver one of the large and two of the small guns each week?

Answer. No, sir. They all have to be made with one set of works at present.

Question. Do you know when the test of those guns that you have already made is to be completed?

Answer. Commodore Hunt tells me that as soon as he gets through with this commission he will be there and test them.

Question. Do you know how long he is to be detained on this commission?

Answer. I suppose about eight or ten days. The particular merit of my gun is the amount of powder that can be used in it with safety, and the execution they will do by being strong enough to withstand such a heavy charge of powder. Those guns made for Admiral Dahlgren proved to be as well manufactured—as to carrying the ball true—rather better than any other they ever had before. Those I have now are supposed to be the same. There is no trouble, I apprehend, on that score, if I can only get anybody to prove them.

Question. Did the ordnance officers of the War Department have any knowledge of the guns which you delivered to Admiral Dahlgren?

Answer. No more than I told them, and also from this: They sent down Captain Benton to measure them. Admiral Dahlgren said they had stretched in consequence of the firing; and Mr. Watson, the Assistant Secretary of War, sent Captain Benton down there with me, and we measured the guns and found that they were not stretched.

Question. Where are those guns now?

Answer. Three of the guns made for Admiral Dahlgren are now at the navy yard, and I think three of them are in the service.

Question. Do you know what has been done with the three guns in the service?

Answer. I do not; I cannot find out.

Question. Have you tried to find out?

Answer. Yes, sir; they say that one is on the Mississippi, and that two are on the South Atlantic fleet.

Question. From whom have you inquired?

Answer. Mr. Hubbard, our member of Congress, applied to Captain Wise, of the Navy Ordnance Bureau. The effect of a ball going seven miles and one going five miles from a gun is to give a very great additional strain to the gun. The theory is promulgated by cast-iron gun men that you cannot burn over so much powder in a gun; but we have put into my gun, for five hundred times firing, about as much again powder as is used in the cast-iron gun.

Question. Will your gun carry a ball seven miles with as much accuracy as a cast-iron will carry it five miles?

Answer. Yes, sir; and, with an ordinary elevation, you will get at least one-third more range. The common elevation would be from seven to twenty degrees—what they call fighting distance. Now if we can fire a mile further on the enemy than their guns can reach, the victory is won before we reach the battle-field.

By the chairman:

Question. What amount of powder is used in your 50-pounder guns?

Answer. Admiral Dahlgren fired only three and a quarter pounds; I told him that he should use ten pounds.

Question. What is the ordinary charge used in your own trials?

Answer. The ordinary charge is three and a quarter pounds.

Question. What charge have you tried in your gun ?

Answer. I have tried twenty pounds. I fired a gun with a view to burst it. I put in twenty pounds of powder and a 200-pounder shot turned to fit the bore of the gun. The shot and the powder filled up the whole bore of the gun, so that the shot stuck out about an inch beyond the muzzle ; against that I set a cast-iron block weighing about 2,800 pounds, and then fired it off.

Question. What was the effect ?

Answer. The gun was kicked back about sixty feet, and the cast-iron block was driven twelve feet through a bank of earth.

Question. What was the effect on the gun ?

Answer. We could not see but the gun was as good as ever it was. I made a shot about seven feet long, weighing 450 pounds, and fired it from one of my guns with twenty pounds of powder. It went through two earthworks, one twelve feet thick and the other ten feet thick, and then went off into the river. I think it would have penetrated fifty feet into an earthwork.

Question. What is the service charge of a 100-pounder Parrott gun ?

Answer. Ten pounds.

Question. Do you say that three and a quarter pounds is the ordinary charge of a 50-pounder Dahlgren ?

Answer. Perhaps five pounds.

Question. How much for a 100-pounder ?

Answer. Ten pounds of powder, and for a 200-pounder fifteen pounds.

Question. There is not so much powder required for a rifled gun as for a smooth-bore ?

Answer. No, sir.

Question. What charge would you deem perfectly safe in a 100-pounder gun of your manufacture ?

Answer. Twenty pounds ; double the usual charge.

Question. What in a 200-pounder gun of your manufacture ?

Answer. Thirty pounds ; twice the service charge for a Parrot gun of that size. The Parrott 200-pounder I believe is used with sixteen pounds of powder. I would not object to thirty-two pounds in my gun of that size.

Question. How large could you construct a gun on your plan ? Could you make a 15-inch gun on your principle ?

Answer. Yes, sir, but you would have to build works on purpose for that. There are now no works in the country to build such a gun as that.

Question. How large a gun can you construct with the works you have ?

Answer. A 200-pounder.

Question. What is the calibre of a 200-pounder ?

Answer. Eight-inch.

By Mr. Odell :

Question. What is the range of your 200-pounder ?

Answer. I think it would carry seven miles.

Question. With precision ?

Answer. When you elevate a gun to throw that distance you lose somewhat of your precision ; you must have experience and practice to get your range at long distances.

Question. All the object of so long a range as seven miles is to show the force of the powder you can use, and what power you can exert at short distances ?

Answer. No, sir, not that.

Question. Can you see a house at seven miles distance ?

Answer. Yes, sir, you can see a house across Long Island sound, where it is eighteen miles wide. You can see a vessel eight and ten miles off. I suppose

the Parrott gun fired at thirty degrees of elevation, with such charges of powder that we use, would burst at every third fire.

By the chairman :

Question. Do you know anything about the English Armstrong gun ?

Answer. I have never seen any of them. I have only seen drawings and accounts of them.

Question. They are wrought-iron guns ?

Answer. Yes, sir.

Question. They are not made on your principle ?

Answer. No, sir.

Question. They are made of rings ?

Answer. They are made of sleeves put over one another, each sleeve extending the whole length of the gun.

Question. And the Whitworth gun is a wrought-iron gun ?

Answer. Yes, sir.

Question. Is that gun constructed upon your principle ?

Answer. No, sir; they are made of sleeves like the Armstrong gun, not welded together.

Question. Do you consider your gun a stronger gun than either of those ?

Answer. Yes, sir.

Question. What is the thickness of your gun as compared with the Dahlgren gun ?

Answer. Just about the same. The rule is, I think, four calibres ; mine is quite as heavy as any of them.

Question. How does the weight of your gun compare with the Parrott or Dahlgren gun of similar calibre ?

Answer. Mine is heavier, for wrought-iron is heavier than cast iron. I think my 50-pounder is about 400 pounds heavier. There is no other gun like my large gun ; it is different in shape from any other gun. I got no directions from here, but made it according to my own notions.

Question. It costs a great deal more than the cast-iron gun, of course ?

Answer. Yes, sir ; about six times as much. But a cast-iron gun can be made in a very short time, while it will take a week to make one of our large guns. The difference is in the heating, labor, and time used on it. Then, all the sections of our gun must be forged, bent, welded, and turned before you put them over the gun, when they are welded again.

Question. Your gun is considerably stronger than the Rodman gun ?

Answer. Yes, sir.

Question. Do you consider a gun made on the Rodman principle as much stronger than a cast iron gun made on the old principle ?

Answer. I cannot say that I do ; you cannot make much out of cast iron more than cast iron.

Question. But you can have cast iron strained or not strained in casting.

Answer. That is so.

Question. Is a cast iron gun, cooled from the inside, outwardly strained as much as one cooled from the outside inwardly ?

Answer. I do not know ; it all shrinks.

Question. What is the object of cooling from the inside, then ?

Answer. I think Mr. Rodman's theory is that it makes the grain of the iron a little finer by cooling from the inside, and therefore he calls it better ; but in my opinion it does not make it much better.

WASHINGTON, *February 2, 1865.*

HORATIO AMES recalled and examined.

By Mr. Gooch:

Question. How fast can you furnish your guns to the government, and of what size, and at what price?

Answer. I can make for the government fifty 100-pounder wrought-iron guns per year, and deliver the first gun by the first of May next, and one gun each week thereafter. Should the government want seven or eight-inch guns, I could make preparations, and make of either of those kinds twenty-five guns per year, and deliver one each two weeks, beginning to deliver in nine months from receipt of order. All these guns to be rifled. The price will be one dollar per pound. A 100-pounder will weigh about 12,000 pounds; a 150-pounder about 17,000 pounds, and a 200-pounder about 28,000 pounds, according to drawing.

*Testimony of Robert C. Parrott.*WASHINGTON, *January 18, 1865.*

ROBERT C. PARROTT sworn and examined.

By the chairman:

Question. State what you know of the gun that goes by your name—the Parrott gun.

Answer. In 1860 I made the first of those guns. I made it from my own ideas upon the subject of what would make a gun of moderate cost, and of good strength. That was a gun of the smallest size, and I tried it about a hundred firings; and it was exhibited to some of the officers at West Point, which was near me. That was a 10-pounder, the smallest size I ever made. Previous to the breaking out of the rebellion I had made a 20-pounder and a 30-pounder gun—the same kind of guns now known in the service by that name. In making those guns I took as my guide, very nearly, the well-established proportions of the ordinary cast-iron gun, that is to say, I made the thickness of the gun around the charge about equal to the bore of the gun—if anything, a little more. Then, desiring to rifle the gun, I knew I must get additional strength, and to do that I put on a wrought-iron band around the breech, so that it is a cast-iron banded gun. When the war came on it was known to some of the officers of the army, and particularly to Major Benton, who was stationed at West Point, that I had these guns. Major Benton had seen some firing from them.

These were rifled guns, as are all the guns I make. At the sudden breaking out of the war inquiry was made for these guns. I suppose it arose from the reports which had been made to the proper authorities, and their having been fired two hundred rounds. They were ordered by the ordnance department of the government, and were sent to the arsenal at Washington. After some subsequent firing with them, I was ordered to go on and make some more, and during the spring and summer of 1861 I made a number of guns of each of those sizes, just as they were called for, according to the exigencies of the service. Everything was under a great pressure and hurry here, and when those guns got to Washington the present General Ricketts, who had a battery at this place, upon conferring with Major Benton, requested that he should have his battery composed of those 10-pounder guns, and that was the battery of Parrott guns which was in the fight at Bull Run. He also had some 20 and some 30-pounder guns in the same battery. If they did not give entire satisfaction, they were considered very valuable guns. The general opinion is that they are very reliable, as much so as anything of the kind; and, on the whole, they have given great satisfaction. I am now making those guns and a large number of projectiles for them.

Question. You were the inventor of those guns, were you?

Answer. Yes, sir. I do not pretend to be the inventor of the idea of putting a band on the gun, because that thing had been tried before; but I believe my gun is the first banded gun that was ever actually introduced into the service of any country as a part of its armament.

Question. Were these guns ever tried by the ordnance department before they adopted them?

Answer. The ordnance department can hardly be said to have adopted them. They were called for in the pressure of the times, and got into the service in that way, but in the summer of 1861, they fired a 10-pounder as many as a thousand times as an experiment, and it stood it well. By that time the guns had been in a great many engagements, and the 20 and 30-pounders had been fired two and three hundred rounds. The navy had by that time taken up the 20 and 30-pounders also. Those guns, I believe, are satisfactory in every way. Of course people have different opinions about guns, as about everything else, but I believe the opinion of the service generally is, considering all things, that they are good guns.

Question. Have you any contract with the government for making those guns?

Answer. I had not at that time.

Question. Have you had since?

Answer. Yes, sir.

Question. What number of guns have you made for the government?

Answer. In all, about 2,500, but a very large proportion of them have been of the small and lighter calibre.

Question. When did you commence making the 100 and 300 pounders?

Answer. Before answering that question, I desire to state that when I furnished the government with these guns—the 10, the 20, and the 30-pounders—I stated to them the exact price I should charge, and I have not altered the price from that day to this. Though the rise in the price of material has increased so much that I have not received any large profit on those guns, yet I have preferred, as a matter of personal feeling, to continue to furnish those three guns at the original price.

Question. State the price of those three guns.

Answer. The 10-pounder is \$180; the 20-pounder is \$380; and the 30-pounder is \$520.

Question. Did you claim any seigniorage for the invention?

Answer. I never did. I took out a patent which, after considerable trouble, they allowed me on account of the peculiar proportion and manner of banding the gun, but I have never charged directly anything for the invention; I have charged only a fair manufacturing price. In the summer of 1861 I went to work upon the 100-pounders. In the fall of 1861 I tried one of those guns, and then informed the ordnance department and the army generally that I had such a gun, and that it had done pretty well. They then ordered the gun to be tested, and after they had fired it two hundred rounds, they bought it of me as an experimental gun. It is in that way that my guns have been introduced into the service. For the 100-pounders I charged, I think, \$1,200 then; now the price is \$1,300. I was so well satisfied with that gun that I went on and made some others on my own account, and before I had finished many, a call came for them. I had by that time—the winter of 1861—made a 200-pounder, which is a gun of eight-inch bore. That gun was brought to the notice of the department, and tried in the same way as the 100-pounder. The ordnance department ordered four or five of each of those guns. There was a great call for them. Many officers had seen them fired at the foundry, and, as you know, there was a great desire to get hold of everything in the shape of efficient artillery; and when General McClellan's army was moved to the Peninsula, some of these guns were sent along, and were placed in battery near Yorktown, and fired upon Gloucester Point,

Yorktown, and the water-batteries there. As a new gun they were considered very successful indeed. At all events, they were looked upon as very much in advance of anything they then had. I do not profess to think they are the best gun in the world, but I think they were the best practical thing that could be got at the time, and I suppose that was the great reason for getting them. These guns have been reported upon by many officers, both our own and foreign officers; and among the rest, by Prince de Joinville, a man well versed in the artillery of the French navy, in which he served. All the trials of the guns at the foundry have been satisfactory to the officers who witnessed them. But before that time even, the navy had ordered the guns, and the army had ordered them, and I have since been constantly engaged in the manufacture of these guns, and of projectiles for them.

Question. Is there any peculiar projectile for these guns?

Answer. Yes, sir; and that is also a design or invention of my own.

Question. How does it differ from the ordinary projectile?

Answer. These guns are rifled, and the projectile is cylindrical—the front end being pointed, and the back end flat; around the circumference of the back end there is a ring of brass which the powder, when the gun is fired, forces into the grooves of the gun, and that imparts the spiral motion to the shell and prevents windage.

Question. Is that patented?

Answer. I have a patent, but I have pursued the same course with that as with my patent on the gun, and until a very great rise in the price of materials took place I continued to charge for the shell the first price put upon it. I suppose it would average from six to eight cents per pound. The large projectiles were about six cents per pound. That included the finishing, and the brass ring which is of considerable weight, and somewhat expensive. I do not consider that I have charged—and those familiar with those things agree with me—more than a fair manufacturer's profit. I have never charged directly to the government any patent-fee or seigniorage either on guns or shells.

Question. How does your shell differ from the James shell?

Answer. The James shell has a coating over nearly all the outside, of lead back of the shell through which the gas from the powder gets under the lead or other substance, and a canvas covering over that. Holes are made in the and forces it outwards, as I understand it.

Question. But your ring is forced into the grooves by an opposite motion?

Answer. Yes, sir; by the powder driving behind.

Question. Is your shell much used?

Answer. Yes, sir.

Question. Do you also make solid shot?

Answer. Yes, sir.

Question. Is that made in the same way?

Answer. Yes, sir; but with no hole in it.

Question. Do you charge the shell yourself?

Answer. No, sir; I furnish the shells to the government empty, but all ready for the charge and fuze.

Question. Are the large guns furnished at the same price per pound as the smaller ones?

Answer. They are worth about the same price per pound. I have omitted to state that the first of my largest guns—the 300-pounder—was made in the winter of 1862-'63. That is a 10-inch gun. The government took that for the purpose of an experiment in the service, and sent it down to Morris's island.

Question. Is that the gun which Gillmore used, and which was known as the "Swamp Angel"?

Answer. No, sir; that was an 8-inch gun.

Question. Was that one of your guns?

Answer. Yes, sir ; but it was a 200-pounder.

Question. How many of those 300-pounders have you made ?

Answer. About ten now.

Question. How many of the 200-pounders ?

Answer. I should think some one hundred and fifty or one hundred and sixty, for the army and navy.

Question. How many of the 100-pounders ?

Answer. About six hundred, I should think.

Question. Do you make intermediate ones between that and the 30-pounder ?

Answer. I now make a 60-pounder for the navy. That is a gun quite recently made, and not yet much introduced into the service.

Question. Have you ever endeavored to strengthen your guns by cooling them from the inside upon the Rodman principle ?

Answer. Yes, sir ; a little with the heavy guns.

Question. Do you consider that that contributes considerably to the strength of the gun ?

Answer. So far as I can judge, it does.

Question. Does any other person make guns upon your principle ?

Answer. I presume that all the guns that go by my name are of my manufacture. I have seen guns captured from the enemy very much like them ; but all the guns spoken of in our army and navy as my guns are made by me.

Question. I hear it stated that some of your large guns failed in the recent attack on Fort Fisher. Have you heard anything about that ?

Answer. I have heard a great deal about it. I came to Washington partly on that business. The Navy Department ordered a board of officers, experienced in ordnance matters, to assemble here upon that subject.

Question. Have they acted upon the matter ?

Answer. They have, and are about making a report.

Question. To what do they ascribe the cause of the failure ?

Answer. I cannot tell you what conclusion they have come to ; but I can tell you to what I ascribe the difficulty with the largest guns : it is the bursting of the shells in the bore of the guns. I ascribe all, or nearly all, the accidents to the premature explosion of the shells in the guns.

Question. Have you had an opportunity to examine those guns since they were burst ?

Answer. Some of them I have.

Question. I mean those burst in the navy lately.

Answer. No, sir, I have not. They may have been engaged in operations since, and I do not think the authorities will get reports accurately in regard to the main point, which is how many shells were actually burst in those guns. It has been a matter of much concern with me, and I would rather not make a gun than have any accident occur. I ascribe the difficulty to the friction of the powder in the shell itself. At first it was natural enough to ascribe the difficulty to bad shells, bad castings, or bad fuzes, &c. But upon full trial it appears above all question that the difficulty arises from the powder exploding in the shell within the gun by friction caused by the striking of the powder against the inside of the shell. A 300-pounder shell is ten inches in diameter. A round shell of that diameter holds about three pounds of powder. My 300-pounder shell holds about seventeen pounds of powder. Now, when you fire a gun, and strike the butt of the shell suddenly with the immense force of the charge, there is a reaction of the powder within the shell against the bottom of the shell ; and if there is any roughness so as to cause friction at the bottom, the powder will be exploded in the shell while it is within the gun. Thinking that to be the case, I have for a long time been endeavoring to coat the inside of the shell with varnish or lacquer, and now I am able to do it with entire success. A great many people were skeptical about it, and precautions have not been

taken in regard to it as quickly as they might have been. I now melt together rosin, tallow, and common brown soap, forming a thin liquid mixture, and pour it into my shells, and pour it out again, leaving a coating on the inside which covers over the rough iron; and when that is done, I find the shells can be fired without premature explosion. Some two months ago Captain Temple, one of the officers of this very fleet of Porter's, came to the foundry and became aware of this fact. He had two 100-pounders on board his vessel. When he got back he found that his shells had no such coating, and he immediately set to work and lined them with asphaltum, &c. He fired his guns fifty or sixty times each during the engagement, and not a single shell exploded prematurely in his guns, while in some of the other vessels around him shells were exploded prematurely, and thrown out of the guns in fragments. That is so stated in a letter of his which I saw yesterday.

Question. You say you have made some 2,500 of these guns altogether.

Answer. Yes, sir.

Question. Have you any means of knowing how many of them have failed!

Answer. I do not know, but about fifty I should think. A good many have failed by blowing off the muzzle. The 300-pounder, the first one which went to Charleston, had its muzzle blown off, and that was attributed very correctly to the bursting of a shell in the gun. It had been fired only twenty-seven times. They went to work and dressed off as well as they could the rough broken end, and fired it three hundred times more; and from that time the gun began to crack from the muzzle end, which was very natural. They then gave up firing the gun. The other 300-pounder sent there was fired 1,004 times at Morris's island.

Question. How much is the service charge of a 300-pounder?

Answer. Twenty-five pounds of powder.

Question. Is the charge the same for round shot as for shell?

Answer. If used for round shot the amount should be increased.

By Mr. Odell:

Question. Have any of your guns exploded with the round shot?

Answer. No, sir. They are not often used with round shot, but they can be. I should not be surprised, however, if it should happen, for this reason: a gun does not always burst at the time you break a shell in it, but the bursting of the shell injures and weakens the gun. There is the difficulty. You do not know how much the gun may be injured; it may be broken half through, and the next time it is fired it may break entirely, and then you say it burst by what ought not to have burst it. You do not know what effect previous discharges may have had upon the gun, and that is one of the great difficulties in this matter.

By the chairman:

Question. Is there more tendency to burst these heavy guns than the lighter ones?

Answer. Yes, sir; for you cannot make a gun stout in proportion to its calibre in my opinion. The bursting of a shell containing seventeen pounds of powder in a gun is a different thing from bursting one containing only a few ounces.

Question. And I suppose the strain upon a gun depends something upon the degree of elevation.

Answer. Yes, sir.

Question. Your gun is made with a wrought-iron band around it?

Answer. Yes, sir.

Question. The gun and the band are not one solid piece of metal.

Answer. No, sir.

Question. Upon firing the gun until it gets hot, you expand the metal; and when it cools, it shrinks. Does not that create a tendency in the band to get loose?

Answer. No, sir; I do not know that that has occurred in a single instance. It is made a little smaller than the cast-iron, finished very accurately; the cast-iron over which it is to be fitted is turned very accurately, a certain difference being allowed in the size of the two, and then the wrought-iron band is heated until it becomes sufficiently large to slip on the gun. In cooling and contracting it binds upon the gun very much as you put a tire on a wheel. The cast-iron is in such close and intimate contact with the wrought-iron that they are very nearly like one piece of metal, and the heat of the one is extended to the other. I do not know that any case has ever been reported of the starting of the band.

Question. Is there any other rifled ordnance except yours now used by us?

Answer. Not to any great extent. Some other rifled guns have been introduced into the service and some of the old guns of the army have been rifled. In doing that, however, they adopted my plan of rifling, and I believe my projectile is now used for them.

Question. Do you mean that when they rifle the old guns they put your band on?

Answer. No, sir. They have used my band in some cases. I mean to say that in rifling the old guns they have done it latterly according to my plan—that is, giving the same twist I employ.

Question. What do you know about the Whitworth gun?

Answer. I have seen them, and know something about them. That is a rifled gun also.

Question. Is it a breech-loader?

Answer. It was originally, but latterly they have been made otherwise. The tendency in England is to abandon the breech-loader.

Question. Is that a wrought-iron gun?

Answer. It is wrought-iron or steel.

Question. Do you consider that gun an improvement upon yours in any way?

Answer. It is a very costly gun. So far as we have had any specimens of them in this country—we have captured some—I should not prefer them to mine. You are probably aware that the rifling is not by grooves in a circular bore, but the bore is made hexagonal and with a twist, and the ball is made with the same twist; and in driving the ball out you make it rotate on its axis. The difficulty is, that that brings an enormous strain on the gun. A great many serious accidents have happened with those guns. There were two of them at Morris's island, used in firing on Fort Sumter, and both of them became disabled. They were made in parts, and, some how or other, one part slipped from the other.

Question. How does the Armstrong gun differ from yours.

Answer. That is a wrought-iron gun and a breech-loader. Latterly Armstrong has made his heavy guns muzzle-loaders. He has also lately made some heavy smooth-bore guns; but his original contrivance was a breech-loader.

Question. Have the English or French invented any guns which, for accuracy and endurance, are better than yours?

Answer. I should suppose that the Armstrong heavy wrought-iron gun, if well made, would endure longer than mine. They are very costly, and they are even yet an experiment with them. With the exception of the small size guns, I do not know that they have introduced them into the service as a regular thing.

By Mr. Odell:

Question. How does the cost of those guns compare with yours?

Answer. We can hardly compare their relative cost now, owing to the de-

rangement of our currency; I suppose, however, they are much more costly in England than our guns are here.

By the chairman :

Question. Do you know anything about the Ames gun?

Answer. I only know what has been casually mentioned to me. I have not seen the gun, or any drawing of it. The opinion of officers, however, who have seen the gun is, that it is a very strong one; and gentlemen, in whose opinion I have confidence, say that it is.

Question. You are aware of the manner in which it is made—by concentric rings?

Answer. Yes, sir; and I think that should make a strong gun.

Question. What is its comparative cost?

Answer. I do not know, but I should presume it would be a very costly gun. I look upon my gun as one which can be rapidly produced, and, when properly used, safe, efficient, and very accurate. I consider it, at any rate, as something a great deal better than we had, and perhaps as good as we were likely to get, but I shall be very glad, I am sure, to see any improvement upon it. I think I should do the gun justice, however.

Question. What do you say about the Dahlgren gun? Is there anything peculiar about that? What is the difference between that and the columbiad?

Answer. I give Captain Dahlgren the credit of introducing that gun into the navy. I made the first 9-inch and first 11-inch Dahlgren guns that were introduced into the service. He is deserving of the credit of introducing that gun. The model of that gun is admirable; that is, of what is properly called the Dahlgren gun, which are the 9 and 11-inch guns, and lately they have introduced larger sizes. I believe Captain Dahlgren thinks the army have taken the models of his guns, as the columbiads are made essentially as the Dahlgrens were. The old columbiads were very different indeed. They were flat behind, and very clumsy compared with the Dahlgren gun.

Question. Are your guns made after the shape of the Dahlgren?

Answer. No, sir; they cannot be very well. They are very simple in their form. The rear part is cylindrical—about a calibre thick—a thickness about equal to the diameter of the bore. Then the breech is rounded off much as usual for heavy guns, and the muzzle part is thicker than the Dahlgren guns are, because mine have a rifle groove.

Question. Are they using rifled guns much in the navy?

Answer. Not much, and especially now since the action of the Kearsarge. They use some for chase guns and for occasional distant firing. For main batteries they think they had better rely upon smooth-bore guns with projectiles of large diameter, round or spherical, because they *ricochet* better upon the water; whereas, when a rifled shot hits the water, it bounds off in any direction. When a round shot strikes the water it will continue on in the direction in which it was fired.

Question. Your gun is becoming all the time more and more used in the army, is it not?

Answer. I think it is, but I do not think the use is increasing as rapidly as at times heretofore, partly because there is less urgency for guns and partly for other reasons. I think there has arisen a party feeling about them, as about other things. However, I think that a great majority of the officers who have been in the service with the guns generally prefer my guns to any others. I dare say others will be induced to try other guns. I do not object to that at all, I am sure.

By Mr. Gooch:

Question. Have you ever fired one of your guns before it was hooked to see how much it would bear.

Answer. No, sir. In that shape it is very much like an ordinary cast-iron gun.

By the Chairman:

Question. What is the comparative cost of your gun with other guns in the service?

Answer. I do not think my gun is near as costly as other guns compared with the actual expense of making them.

Question. Are rifled guns more expensive than smooth-bore guns?

Answer. Yes, sir.

Question. How much per pound?

Answer. A cast-iron rifled gun, not different from others except in being rifled, would cost but little more. The difference would be the cost of rifling the bore. But putting the cast-iron of my heavy guns at the same price with that of the ordinary cast-iron guns, and add the bare cost of the wrought-iron band, and my guns are as cheap as the ordinary guns. The wrought-iron is worth at least double the cast iron.

Question. How much does the band weigh in comparison with the gun?

Answer. About twenty per cent. of the whole weight, I should think.

Question. Have you inspected these large 15-inch Rodman guns they are making?

Answer. No, sir; I have seen, however, the 20-inch gun in New York.

Question. I am told that the initial velocity of the projectile from a smooth-bore is greater than that from a rifled gun. Is that so?

Answer. Yes, sir.

Question. And yet the rifled gun carries the furthest. How is that?

Answer. The projectile of a smooth-bore gun is much lighter, compared with the charge of powder, than that of the rifled gun. For instance, take a round shell and a round shot; the shell will leave the gun with the greatest velocity, but the shot will go the furthest at a moderate elevation, because the shell being lighter than the shot, the resistance of the air stops it more quickly than it does the shot. The great weight of the shot, once the shot is in motion, carries it further than the shell.

Question. If I understand it, the charge of powder in the smooth-bore is much larger than that of the rifled gun?

Answer. It is not always so; but it may be. The service charge of my 200-pounder is more than that of the 8-inch columbiad, smooth-bore. The charge of my 8-inch gun, the 200-pounder, is sixteen pounds, while the charge of the cast-iron 8-inch columbiad is less than sixteen pounds. I could put into my gun more than that if I used a round shot. One principal reason for the greater range of the rifled projectile is found in its elongated form. A rifled projectile of the same diameter as a spherical projectile moves more easily through the air, just as a well-modelled boat will move through the water easier than a tub.

Question. A rifled projectile in receiving the spiral motion from the groove of the gun opposes a greater resistance to the propelling power, and hence causes a greater strain upon the gun?

Answer. Yes, sir; and that must be taken into consideration in constructing a rifled cannon. Rifled guns have hardly been yet used in any service but ours.

Question. The use of these large guns, the 100, 200, and 300-pounders, is a modern thing, is it not?

Answer. Yes, sir; they have not heretofore been used in war.

Question. How large guns did they use in the war of the Revolution?

Answer. The largest was a 42-pounder, a 7-inch gun, and that was not so

much a heavy gun as a carronade. They introduced an 8-inch carronade which was called a 68-pounder. But it is since the great wars in Europe, terminating in 1816, that most of the modern artillery, except the 32 and the 42-pounders, has been introduced.

By Mr. Gooch :

Question. Have you ever made any guns of the same size and shape as your banded gun, all of cast-iron?

Answer. No, sir; not exactly.

Question. Could you make a gun, substantially similar in size, shape, and weight, to the banded gun, all of cast-iron?

Answer. Yes, sir.

Question. If you could do so, and then test the two guns side by side, you could determine whether there was any superiority in the banded gun?

Answer. Yes, sir; but I must say I consider that pretty much determined already. I know there is a difference of opinion on that point, but any officer who would receive into the service a cast-iron gun, and use the same charge of powder that is always used in guns of that bore, and a shot equal in weight to three ordinary 6-pound shot, would be thought to be a madman. Now, my 20-pounder is exactly the bore of the 6-pounder gun, old fashion. Now, if I should make a cast-iron 6-pounder, and ask them to fire it with two pounds of powder, a full charge, and three shots in the gun, they would think me a madman. And yet that is precisely the difference between the two guns. My 20-pounder fires the same charge of powder as the 6-pounder smooth-bore gun, and a projectile equal to three 6-pound shots. And, besides, my gun is rifled. I am aware of the fact that it has been said that the gun is no stronger for being banded than if it had been all of cast-iron.

Question. You say you now cast your heavy guns on the Rodman principle. Do you consider that there is any particular advantage in that?

Answer. I think there is in heavy guns.

Question. Why?

Answer. Because the bore of the gun, which you want to have of the strongest and closest metal, then becomes surface metal. Every one familiar with castings knows there is a great difference between the centre and the outside of a casting, and that the strongest metal is on the outside. By casting the gun hollow the interior of the bore becomes outside or surface metal, and is much closer grained, and probably better than if you cast the gun solid and then bored it out. And it is the metal nearest the bore that receives the greatest strain. For this reason I have adopted that principle in casting the 100, 200, and 300-pounders.

Question. If it is the better plan in reference to the larger guns, why not in reference to the smaller?

Answer. The same difficulty is not encountered in making the smaller guns. The castings of the smaller guns are very solid to the very centre. That depends upon the mass of iron. That process of casting is somewhat troublesome, and is not often used by Rodman himself. The 100-pounder is a smaller gun than he has ever applied it to.

Question. Have your smaller guns burst in the service?

Answer. I think not beyond blowing off the muzzle occasionally; and they have had a great deal of hard usage. They have put into them a great many experimental projectiles. They have been liable to accident heretofore much more than they will be hereafter.

Question. Can you determine from the examination of a gun, after it has been burst, whether it was burst by the charge, or by the bursting of a shell in it?

Answer. I do not think you can. The strain might be thrown upon a gun so that it would begin to break at the weakest part. You cannot always tell

what the cause is. You can sometimes tell by the location of the fracture, or from the pieces coming out at the muzzle.

By Mr. Odell :

Question. Does the rifling of your gun run at the same angle its whole length ?

Answer. No, sir, but the twist increases at the muzzle. I have been obliged to take out a patent for many things, which patents perhaps are of no use to me at all, for unless the government use the gun it is of no value. I consider that the merit of my gun consists in the combination of all the different parts. The banding, the increasing twist, and the peculiar projectile constitute a sort of whole which I think perform well, and which I think will be made to perform extremely well, and as that increasing twist is a part of the whole, I am glad to mention it.

WAR DEPARTMENT,
Washington City, January 20, 1865.

SIR : In answer to your letter of the 13th instant, I have the honor to transmit herewith a copy of a communication from the chief of ordnance, together with a copy of the report of the commission appointed to examine the Ames gun, at Bridgeport, Connecticut.

It will be perceived, from the communication of the chief of ordnance, that no report of the Ericsson gun has yet been received at that office.

Very respectfully, your obedient servant,

E. M. STANTON,
Secretary of War.

Hon. B. F. WADE,
Chairman of Committee on Conduct of War.

ORDNANCE OFFICE, WAR DEPARTMENT,
Washington, January 20, 1865.

SIR : I have the honor to acknowledge reference to this office of a letter from Hon. B. F. Wade, asking for copy of the report of the commission appointed to examine the Ames gun at Bridgeport, and, in obedience to instructions, to transmit a copy of said report.

No report on the "Ericsson gun" has been received at this office.

Very respectfully, your obedient servant,

WM. MAYNADIER,
Colonel and Acting Chief of Ordnance.

Hon. E. M. STANTON,
Secretary of War.

EXECUTIVE MANSION, *August 21, 1864.*

Mr. Ames having constructed certain wrought-iron cannon of 7-inch calibre, which he desires to have inspected and tested with a view to determine their fitness for the United States service, it is

Ordered,

First. That a board of officers, to consist of Major General Gillmore as president of the board, a competent ordnance officer to be designated by the Secretary of War, and a competent officer to be designated by the Secretary of the Navy, shall be organized, and meet at Bridgeport, Connecticut, on the first day

of September next, with a view of inspecting and testing the aforesaid cannon and determining the capacity and fitness for the United States service, with such tests and trials as they shall deem proper, and make report to the President of their opinion in respect to said cannon, and their value and fitness for the service.

Second. That the ordnance bureaux of the War and Navy Departments shall provide suitable shot, shells, and ammunition for making the aforesaid tests, and provide all the necessaries for a careful and fair test of the aforesaid cannon.

ABRAHAM LINCOLN.

NAVY DEPARTMENT, *August 25, 1864.*

SIR: By direction of the President you are hereby appointed a member of a board to meet at Bridgeport, Connecticut, on the 1st of September next, of which Major General Gillmore, U. S. A., is president, for the purpose of testing and inspecting certain wrought-iron cannon with a view to determine its fitness for the United States service.

You will proceed and report for this duty accordingly.

Very respectfully,

GIDEON WELLES,

Secretary of the Navy.

Commodore T. A. HUNT, U. S. N.,

Boston, Massachusetts.

ORDNANCE OFFICE, WAR DEPARTMENT.

Washington, August 23, 1864.

SIR: I transmit herewith a copy of an order from the President, directing that a board of officers meet at Bridgeport, Connecticut, on the 1st of September next, to inspect and test a cannon made by Mr. Ames, with the instructions of the Secretary of War thereon, designating you as the ordnance officer on said board; also directing that all necessary ammunition for the trial be furnished. You will conform to the order and directions, and you are authorized to call on any arsenal for such ammunition as may be required to make such trials as the board may desire.

Respectfully, your obedient servant,

GEO. D. RAMSAY,

Brigadier General, Chief of Ordnance.

Major T. T. S. LAIDLRY,

Inspector of Cannon, &c., No. 710 Broadway, New York.

BRIDGEPORT, CONNECTICUT, *October 27, 1864.*

In pursuance of the foregoing orders, and subsequent orders from the Secretary of War, postponing the meeting of the board until the 15th day of September, 1864, the board met and the trials commenced at Bridgeport, Connecticut, on the day last mentioned. All the members of the board were present.

The gun to be tested was in readiness and suitably mounted. It is of wrought-iron, weighs, according to Mr. Ames's statement, 19,400 pounds, is bored to a 7-inch calibre, and is rifled with a uniform twist of one turn in thirty-five (35) feet.

The gun is built up from the cascabel on the end of a long cylindrical port bar. The end of this bar is first enlarged by welding pieces around it. It is then enlarged still further by placing two wings on the end one over the other concentrically, and welding them there in succession. Against the end of the cylinder, thus increased to twenty-eight (28) inches in diameter, is welded a circular plate or disk, also twenty-eight (28) inches in diameter, and four inches thick. This disk is composed of a centre piece ten inches in diameter, surrounded by two concentric rings, one outside of the other, all accurately fitted together by turning. The bottom of the bore terminates against this disk. Upon this disk is welded a ring of twenty-eight (28) inches exterior diameter, four inches interior diameter, and five inches thick, compounded of three concentric rings, accurately fitted together by turning. The inner one is ten inches in exterior diameter, and about six inches in thickness, so that its ends project on either side about half an inch beyond the faces of the other two rings. This is intended to secure a perfect weld next the bore, and force out the slag.

Other compound rings, made in the same manner, are welded on one after the other, until the gun is of the required length.

In making the compound rings for the small part of the gun, between the trunnions and muzzle, the outer ring is omitted.

The gun remains in a horizontal position during this process of construction, and is handled by means of the bar projecting from the cascabel.

The welding on of the disk and rings is done with a hammer worked horizontally by steam; a hammer working vertically is also used against the sides of the piece.

The inner ring of the compound rings is made from a block six (6) inches by ten (10) inches by boring a hole four inches in diameter through it, and turning off the corners. The fibres and laminae of the metal lie in planes at right angles to the axis of the gun. The centre and outer rings are made like a tire by bending the bars and welding the ends together, thus placing the layers of the metal in cylindrical surfaces.

The trunnions are attached by being screwed into the sides of the piece three inches.

The grooves of the piece submitted to trial were found to be only (058) fifty-eight thousandths of an inch in depth, which was not sufficient to confer a rotary motion upon the projectile with certainty, as was ascertained after a few trials. The board therefore adjourned to have the grooves cut to $\frac{1}{10}$ of an inch in depth. This having been accomplished the trials were resumed on the 27th day of September.

Considerable delay and many interruptions in the progress of the trials were occasioned by the want of suitable projectiles. Those of the Hotchkiss pattern, which have been officially proscribed for rifles of a large calibre on account of their excessive strain upon the gun, were almost exclusively used. In weight they varied from 104 to 127 pounds.

The powder used is what is known as No. 7 experimental powder, giving a pressure of 5,700 pounds per square inch in an 8-inch gun.

The charges were varied increasingly from 13 to 30 pounds, although it was frequently necessary to reduce the higher charges in order to accommodate the projectiles, from which the packing would often strip or the cap break, even with comparatively low charges.

The proper instruments for determining the ranges of the shot, fired, as they were, over the water, were not received until the gun had been fired 600 times, and was much enlarged, giving a windage of more than $\frac{3}{10}$ of an inch over the shot, and thereby causing a great loss of velocity and range.

The initial velocity of the shot fired with 19 pounds of powder was determined by means of the Vigwotte chronoscope when the gun had 130 rounds. The velocity thus obtained was 1,480 feet.

Owing to the difficulty experienced from the fragments of the lead thrown from the shot cutting the wires prematurely, no efforts were made subsequently to obtain the velocities with other charges.

The greatest enlargement of the bore of the piece for the first 100 rounds was one hundred and twenty-one-thousandths (0.121) of an inch, and at fifteen (15) inches from the bottom. After this the enlargement was slight for each additional one hundred (100) rounds, until we had reached five hundred (500) rounds, and began to use twenty-five (25) pound charges.

After the six hundredth (600) round the enlargement exceeded three-tenths of an inch, which is the greatest measurement the star-gauge would record; this maximum enlargement extended for a distance of three (3) inches along the bore, beginning at a point 20 inches from the bottom.

When the trials commenced the vent was in the metal of the gun, there being no vent-piece, and was so much enlarged by the first 100 rounds that it had to be bouched; a copper vent-piece, secured by a steel plug screwed in, was inserted, and answered for the rest of the firing.

At about the 560th round it was first discovered that the metal of the gun had been so much stretched laterally at the place of maximum interior enlargement that it was plainly visible in a swell on the outside entirely *encircling* the piece. There was an increase of $\frac{1}{4}$ of an inch in the exterior diameter at that place. This swell gradually diminished to nothing at a distance of 4 inches on either side of the circle of greatest enlargement.

When the gun had been fired but 19 rounds, and before the grooves had been cut to the required depth of one-tenth of an inch, a crack in the inside, sufficiently wide and deep to be easily felt with a steel point, appeared, *running* a little more than half way round the bore, at a distance of 25 inches from the bottom. This crack was partially taken out of the grooves in re-rifling the piece. Subsequent firing did not materially alter its appearance, or in *any way* enlarge it on the surface of the bands; while in the grooves it was *gradually* merged into or replaced by a series of holes or cavities—one in each groove—which appeared, one after the other, as the trials progressed. The first one that attracted attention grew wider and deeper until, at the 200th round, it measured three-eighths ($\frac{3}{8}$) of an inch in depth and about one (1) inch in width at the surface of the bore. After the 300th round it was one and three-eighths ($1\frac{3}{8}$) inch deep, and had evidently penetrated entirely through the tube formed by the inner rings. Its progress was then apparently arrested in a greater or less degree by the metal of the middle rings. After the 600th round this cavity measured one and three-quarter ($1\frac{3}{4}$) inch in depth, and about one and one-eighth ($1\frac{1}{8}$) inch in width.

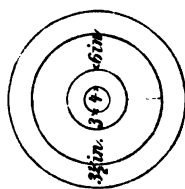
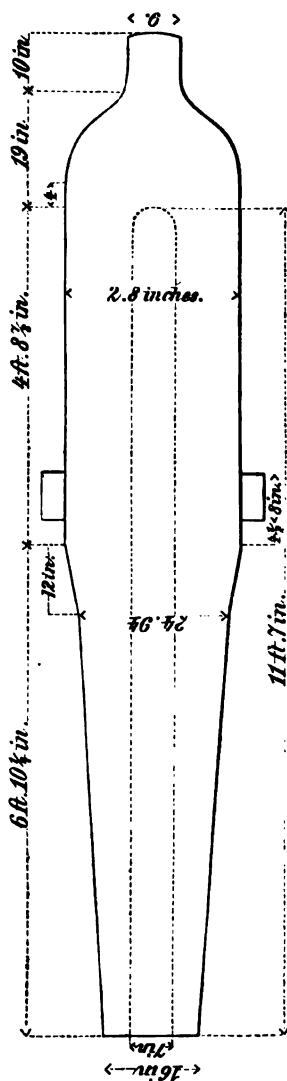
After the 700th round these cavities measured as follows: The largest, $1\frac{3}{4}$ inch in depth and $1\frac{1}{2}$ inch wide. The others have enlarged slightly, but are, apparently, no deeper. They average about $\frac{3}{8}$ of an inch deep and 1 inch wide. At the close of the trials, (700th round,) the vent-piece having been used 600 times, the interior orifice of vent measured 0.25 inch in diameter. Radiating from the entrance of the vent-piece into the bore are three cracks—one in front and two in rear—thus:

○ -- and measuring in length 0.9 inch and 0.9 inch, and 0.6 inch, respectively, and about 0.08 inch deep.

The edges of the bands are at present but slightly worn, and the rifling of the piece not much impaired.

AMES'S WROUGHT-IRON RIFLED GUN—BORE, 7 IN. DIAM.; WEIGHT, 19,400 LBS.

No. 2.



Cross section at breech.

Scale of 2 $\frac{1}{2}$ feet to the inch.

OCTOBER 27, 1864.

It is the unanimous opinion of the board that Ames's wrought-iron guns possess, to a degree never before equalled by any cannon of equal weight offered to our service, the essential qualities of great lateral and longitudinal strength, and great powers of endurance under heavy charges; that they are not liable to burst explosively and without warning, even when fired under very high charges; and that they are well adapted to the wants of the service generally, but *especially* wherever long ranges and high velocities are required.

It is also the unanimous opinion of the board that Ames's 7-inch guns, of which he has now fifteen (15) nearly finished, possess sufficient weight and strength to receive an 8-inch bore, and even greater, although not heavy enough for a 10-inch bore.

The board recommend that in any future contracts for these guns, the limits of weight for certain calibres be fixed by the agent of the United States.

The board further recommend that the gun which they have tried be rebored to eight inches and rifled, and then submitted to another series of tests similar to those through which it has just passed; to be then cut up for examination.

Summary of firing.

Gun fired 700 times as follows:

380 times with 19 lbs. No. 7 powder.	3 times with 18 lbs. No. 7 powder.
114 do. do. 25 lbs. do. do.	2 do. do. 24 lbs. do. do.
65 do. do. 20 lbs. do. do.	37 do. do. 25 lbs. cannon do.
20 do. do. 13 lbs. do. do.	24 do. do. 20 lbs. do. do.
12 do. do. 15 lbs. do. do.	6 do. do. 19 lbs. do. do.
6 do. do. 30 lbs. do. do.	3 do. do. 15 lbs. do. do.
5 do. do. 21 lbs. do. do.	3 do. do. 17 lbs. do. do.
5 do. do. 22 lbs. do. do.	2 do. do. 13 lbs. do. do.
4 do. do. 23 lbs. do. do.	6 do. do. 25 lbs. do. and mortar
3 do. do. 17 lbs. do. do.	powder.

In addition to the foregoing, Mr. Ames states that he fired from the gun before the board assembled, 13 rounds, as follows:

10 times with 13 lbs. No. 7 powder.	1 time with 20 lbs. No. 7 powder.
1 do. do. 16 lbs. do. do.	1 do. do. 25 lbs. do. do.

The board have the honor to submit this report of its proceedings to this date and have adjourned to await further instructions.

Q. A. GILLMORE,
Maj. Gen. Vols., and President of Board.
T. A. HUNT,
Commodore United States Navy
T. T. S. LAIDLEY,
Major of Ordnance.

The PRESIDENT of the United States, Washington, D. C.

BRIDGEPORT, CONN., October 22, 1864.

SIR: I have the honor to transmit herewith a record of firing with a 7-inch wrought-iron gun made by Horatio Ames, at Falls Village, Connecticut, of
—, from 15th of September to 26th of October, 1864.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Maj. Gen. Vols., President of Board.

The PRESIDENT of the United States,
Washington, D. C.

EXPERIMENTS WITH CANNON—CLASS I.

Target record of firing with Ames's wrought-iron seven-inch gun, at Bridgeport, Conn., from September 15 to October 26, 1864.

HEAVY ORDNANCE.

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Order of fire.	POWDER.		PROJECTILE.		Elevation.	Pressure.		Velocity.	Range.	Recoil.	Time of flight.	Remarks.
	Time.	Kind.	Weight.	Kind.								
1	1864.											
2	Sept. 15	Hazard's No. 7	13	Hotchkiss shell	53					24.5 inch.		Fragments flew from shell, supposed to be pieces of lead.
3	do.	do.	13	do.	5					21.5		Flight regular.
4	do.	do.	13	do.	5					22.0		Do.
5	do.	do.	13	do.	5							Do.
6	do.	do.	13	do.	5					23.5		Do.
7	do.	do.	13	do.	5					27.5	7½ sec.	Flight irregular. Time of flight 7½ seconds.
8	do.	do.	13	do.	5					23.5	7½	Flight regular. Time of flight 7½ seconds.
9	do.	do.	13	do.	5					23.5	6½	Flight very irregular. Time of flight 6½ seconds.
10	do.	do.	13	do.	5					24.5	7	Flight irregular. Time of flight 7 seconds.
11	do.	do.	13	do.	5					18.5		Flight regular.
12	do.	do.	13	do.	5					24.0	7½	Flight regular. Time of flight 7½ seconds.
13	do.	do.	13	do.	5							Flight irregular.
14	do.	do.	13	do.	10					24.0		Do.
15	do.	do.	13	do.	10					21.5		Flight regular.
16	do.	do.	13	do.	10					22.5		Do.
17	do.	do.	13	do.	15					24.0		Do.
18	do.	do.	13	do.	15					19.5		Do.
19	do.	do.	13	do.	15					18.5		Do.
20	Sept. 27	Cannon.	15	do. 3 flutes	106							Flight not regular.
21	do.	do.	15	do.	8						12½	Went well.
22	do.	do.	15	do.	10						12½	Do.
23	do.	do.	15	do.	10					13.5	12½	Do.
24	do.	do.	15	do.	10					16.0	13	Do.
25	do.	do.	17	do.	10						12½	Do.
26	do.	do.	17	do.	8						13	Do.
27	do.	do.	19	do.	10					20.5	12½	Do.
28	do.	do.	19	do.	8							Lead band flew off.
29	do.	do.	19	do. no flutes	105							Lead band and cap flew off.
30	do.	do.	20	do.	110						12½	Went well.
31	do.	do.	20	do.	110					26	13½	Do.
32	do.	do.	20	do.	110						12½	Do.
33	Sept. 29	Hazard's No. 7	15	do. 3 flutes	106						12½	Do.
34	do.	do.	15	do.	107						13½	Do.
35	do.	do.	15	do.	105						13	Do.
36	do.	do.	17	do. 5 flutes	110						13½	Do.

Target record of firing with Ames's wrought-iron seven-inch gun, at Bridgeport, Connecticut—Continued.

Order of time.	Time.	POWDER.		PROJECTILE.		Elevation.	Pressure.	Velocity.	Range.	Recoil.	Time of flight.	Remarks.
		Kind.	Weight.	Kind.	Weight.							
36	1864.	Hazard's No. 7		Hotchkiss 5 flutes		10°					13 sec.	Went well.
37	Sept. 29	do.	17	do.	121	10°					13	Do.
38	do.	do.	18	do.	122	10					13½	Do.
39	do.	do.	18	do.	121	10					13½	Do.
40	do.	do.	18	do.	121	8					12½	Do.
41	do.	do.	19	do.	119	8					12½	Flight irregular.
42	do.	do.	19	do.	123	10					13½	Went well.
43	do.	do.	19	do.	123	10					12½	Pieces came off from shell.
44	do.	do.	19	do.	110	10					14	Went well.
45	do.	do.	19	do.	108	8					13½	Do.
46	do.	do.	19	do.	109	10					13½	Do.
47	do.	do.	19	do.	109	10					13½	Do.
48	do.	do.	19	do.	109	8					13	Do.
49	do.	do.	13	do.	116	8					9½	Flight irregular.
50	do.	Cannon	13	do.	116	8					11½	Do.
51	do.	do.	13	Schenkl	110	8					13½	Flight very irregular.
52	do.	do.	19	Hotchkiss	108	8					13½	Went well.
53	do.	Hazard's No. 7	19	do. 5 flutes	108	8					13½	Do.
54	do.	do.	19	do.	109	0					13½	Fired into a butt of sand.
55	do.	do.	19	do.	109	0					33½ inch.	Do.
56	do.	do.	19	do.	110	0						Do.
57	do.	do.	19	do.	110	0						Do.
58	do.	do.	19	do.	109	0						Do.
59	do.	do.	19	do.	109	0						Do.
60	do.	do.	19	do.	110	0						Do.
61	do.	do.	19	do.	110	0						Do.
62	do.	do.	19	do.	109	8						Do.
63	do.	do.	19	do.	109	8						Do.
64	do.	do.	19	do.	110	0						Do.
65	do.	do.	19	do.	108	10					12	Band flew off; flight irregular.
66	Oct. 1	do.	19	do. no flutes	108	10					12.75	Flight irregular.
67	do.	do.	19	do. band	108	8					12.5	Band flew off.
68	do.	do.	19	do.	109	8					12.1	Cap broke.
69	do.	do.	19	do. 3 flutes	119	8					13½	Went well.
70	do.	do.	19	do.	120	8					13	Do.
71	do.	do.	19	do.	118	0					13	Do.
72	do.	do.	19	do.	114	0					13½	Fired into a butt of sand.
73	do.	do.	19	do.	114	0						Do.
74	do.	do.	19	do.	110	8						Do.

75	do.	do.	19	do.	do.	119	8	0	Do.
76	do.	do.	19	do.	do.	120	4	Cap broke and flew off.	
77	do.	do.	19	do.	do. no flutes	121	4	Went well.	
78	do.	do.	19	do.	do.	122	4	Do.	
79	do.	do.	19	do.	do.	123	4	Do.	
80	do.	do.	19	do.	do.	123	4	Do.	
81	do.	do.	19	do.	do.	123	4	Do.	
82	do.	do.	19	do.	do.	123	4	Do.	
83	do.	do.	19	do.	do.	119	4	Went well, 10h. 25m. a. m.	
84	do.	do.	19	do.	do.	112	4	Do.	
85	do.	do.	19	do.	do.	112	4	Do.	
86	do.	do.	19	do.	do.	113	4	Do.	
87	do.	do.	19	do.	do.	113	4	Do.	
88	do.	do.	19	do.	do.	113	4	Do.	
89	do.	do.	19	do.	do.	113	4	Do.	
90	do.	do.	19	do.	do.	113	4	Do.	
91	do.	do.	19	do.	do.	113	4	Do.	
92	do.	do.	19	do.	do.	113	4	Do.	
93	do.	do.	19	do.	do. 3 ft. deep	108	4	Cap broke.	
94	do.	do.	19	do.	do. 5 shallow	121	8	Went well.	
95	do.	do.	19	do.	do.	121	8	Cap broke.	
96	do.	do.	19	do.	do.	108	4	Went well.	
97	do.	do.	19	do.	do. deep	108	4	Cap broke.	
98	do.	do.	19	do.	do.	109	4	Went well.	
99	do.	do.	19	do.	do.	109	4	Do.	
100	do.	do.	19	do.	do.	109	4	Do.	
101	do.	do.	19	do.	do.	109	4	Do.	
102	October 6	do.	19	do.	do.	109*	4	Went well, 12h. 27m. p. m.	
103	do.	do.	19	do.	do.	109*	4	Do.	
104	do.	do.	19	do.	do.	109*	4	Do.	
105	do.	do.	19	do.	do.	109*	4	Do.	
106	do.	do.	19	do.	do.	109*	0	Do.	
107	do.	do.	19	do.	do.	109*	0	Do.	
108	do.	do.	19	do.	do. shot	119*	4	Broke into pieces.	
109	do.	do.	19	do.	do.	115*	4	Went well.	
110	do.	do.	19	do.	do.	116	4	Do.	
111	do.	do.	19	do.	do.	116	4	Do.	
112	do.	do.	19	do.	do.	117	4	Do.	
113	do.	do.	19	do.	do.	117	4	Do.	
114	do.	do.	19	do.	do.	117	0	Fired into a butt of sand.	
115	do.	do.	19	do.	do.	116	0	Do.	
116	do.	do.	19	do.	do.	116	0	Do.	
117	do.	do.	19	do.	do.	113	0	Do.	
118	do.	do.	19	do.	do.	114	0	Primer failed—too much wax.	
119	do.	do.	19	do.	do.	116	0	Fired into a butt of sand.	
120	do.	do.	19	do.	do.	116	0	Do.	
121	do.	do.	19	do.	do.	114	8	Do.	
122	do.	do.	19	do.	do.	117	4	Do.	
123	do.	do.	19	do.	do.	117	0	Broke all to pieces in the gun.	
124	do.	do.	19	do.	do.	116	0	Fired into a butt of sand.	
125	do.	do.	19	do.	do.	113	0	Do.	
126	do.	do.	19	do.	do.	115	0	Do.	

* Shot covered with black lead and miles by Mr. Ferris.

Target record of firing with Ames's wrought-iron seven-inch gun, at Bridgeport, Connecticut—Continued.

Order of fire.	Time.	POWDER.		PROJECTILE.		Elevation.	Pressure.			Time of flight.	Remarks.
		Kind.	Weight.	Kind.	Weight.		Pressure.	Velocity.	Range.	Recoil.	
125	1864.										
October 6	Hasard's No. 7.		Lbs. oz.			0°					
126	do.	do.	19	Hotchkiss 3 fl. shot.	115						Fired into a butt of sand.
127	do.	do.	19	do.	115	0					Do.
128	do.	do.	19	do.	115	4					Went well.
129	do.	do.	19	do.	115	4					Do.
130	do.	do.	19	do.	117	8					Small piece came off.
131	October 7	do.	19	do.	117	4					Fired into a butt of sand.
132	do.	do.	19	do.	118	0					Do.
133	do.	do.	19	do.	118	0		1,482 feet			Do.
134	do.	do.	19	do.	118	0		1,478 feet			Do.
135	do.	do.	19	do.	112	0					Do.
136	do.	do.	19	do.	112	0					Do.
137	do.	do.	15	Schenck	125	54					Flight very irregular.
138	do.	do.	15	do.	125	54				7 sec.	Do.
139	do.	do.	15	do.	125	54				7.2	Do.
140	October 8	do.	19	Hotchkiss	115	8				6.9	Fired into a butt of sand.
141	do.	do.	19	do.	117	0					Do.
142	do.	do.	19	do.	114	8					Do.
143	do.	do.	15	Main	96	10					Flight irregular.
144	do.	do.	15	do.	96	10				14.1	Do.
145	do.	do.	15	do.	96	10				14.9	Do.
146	do.	do.	19	Hotchkiss shell.	106	10				15.4	Went well.
147	do.	do.	19	do.	106	10				14.9	Do.
148	do.	do.	19	do.	106	10				14.8	Do.
149	do.	do.	19	do.	106	34				28.3	Do.
150	do.	do.	19	do.	106	0					Fired into a butt of sand.
151	do.	do.	19	do.	106	0					Do.
152	do.	do.	19	do.	106	8					Do.
153	do.	do.	19	do.	106	8					Do.
154	do.	do.	19	do.	105	0					Do.
155	do.	do.	19	do.	105	8					Do.
156	do.	do.	19	do.	105	8					Do.
157	do.	do.	19	do.	105	8					Do.
158	do.	do.	19	do.	105	8					Do.
159	do.	do.	19	do.	106	8					Do.
160	do.	do.	19	do.	105	8					Do.
161	do.	do.	19	Hotchkiss shot.	117	8					Shot broke.
162	do.	do.	19	do.	117	8				8.3	Went well.
163	do.	do.	19	do.	114	5				7.8	Shot broke.

164	do.	do.	19	117	5						Went well.
165	do.	do.	19	118	8						Fired in a butt of sand.
166	do.	do.	19	106	0						Do.
167	do.	do.	19	106	8						Do.
168	do.	do.	19	117	4						shot broke.
169	do.	do.	19	105	4					6.9 sec.	Went well.
170	do.	do.	19	103	4					7.4	Do.
171	do.	do.	19	104	4					6.4	Do.
172	do.	do.	19	104	8						Do.
173	do.	do.	19	114	8						Went well; ceased firing 12h. 15m. p. m.
174	do.	do.	19	117	7					7.3 sec.	Cap came off.
175	do.	do.	19	115	8						Went well.
176	do.	do.	19	107	7						Pieces came off from shot
177	do.	do.	19	105	7						Do.
178	do.	do.	19	107	7						Do.
179	do.	do.	19	106	8						Do.
180	do.	do.	19	106	8						Went well.
181	do.	do.	19	120	8						Do.
182	do.	do.	19	117	7						Do.
183	do.	do.	19	116	8						Do.
184	do.	do.	19	116	8						Do.
185	do.	do.	19	118	8						Do.
186	do.	do.	19	116	8						Shot broke.
187	do.	do.	19	120	8						Cap and lead flew off.
188	do.	do.	19	115	8						Small pieces of lead came off.
189	do.	do.	19	117	8						Cap and lead came off.
190	do.	do.	19	118	7						Pieces came off.
191	do.	do.	19	116	8						Do.
192	do.	do.	19	116	8						Do.
193	do.	do.	19	119	8						Went well.
194	do.	do.	19	119	8						Do.
195	do.	do.	19	108	7						Shot broke.
196	do.	do.	19	108	7						Went well.
197	do.	do.	19	109	7						Do.
198	do.	do.	19	109	0						Do.
199	do.	do.	19	108	0						Fired into a butt of sand.
200	do.	do.	19	109	0						Do.
201	do.	do.	19	110	0						Do.
202	do.	do.	19	110	0						Do.
203	do.	do.	19	109	0						Do.
204	do.	do.	19	110	0						Do.
205	do.	do.	19	109	0						Do.
206	do.	do.	19	108	5						Went well.
207	do.	do.	19	109	5						Do.
208	do.	do.	19	109	5						Do.
209	do.	do.	19	110	5						Went well; vent clogged.
210	do.	do.	19	110	5						Do.
211	Oct. 10.	Cannon	19	116	9						Went well; vent clogged.
212	do.	do.	19	120	9						Cap came off.
213	do.	Hazard's No. 7	19	107	7						Do.
214	do.	do.	19	107	7						Went well.
215	do.	do.	19	107	8						Do.

Target record of firing with Ames's wrought-iron seven-inch gun, at Bridgeport, Connecticut—Continued.

Order of fire.	Time.	POWDER.		PROJECTILE.		Elevation.	Pressure.	Velocity.	Range.	Recoil.	Time of flight.	Remarks.
		Kind.	Weight.	Kind.	Weight.							
	1864.		Lbs. oz.		Lbs. oz.							
216	Oct. 10.	Hazard's No. 7.	19	Hotchkiss shell.	109 8	7°						Went well.
217	do.	do.	19	do.	111	0						Do. Fired into a butt of sand.
218	do.	do.	19	do.	107	0						Do.
219	do.	do.	19	do.	107	0						Do.
220	do.	do.	19	do.	107 8	0						Shot broke.
221	do.	do.	19	do.	112 8	7						Went well.
222	do.	do.	19	do.	105 8	7						Do.
223	do.	do.	19	do.	103	0						Fired into a but of sand.
224	do.	do.	19	do.	105 8	0						Do.
225	do.	do.	19	do.	105 8	0						Do.
226	do.	do.	19	do.	105 8	0						Do.
227	do.	do.	19	do.	107	0						Do.
228	do.	do.	19	do.	106	0						Do.
229	do.	do.	19	do.	103 8	0						Do.
230	do.	do.	19	do.	106 8	0						Do.
231	do.	do.	19	do.	107 8	0						Do.
232	do.	do.	19	do.	107 8	4						Broke in pieces.
233	do.	do.	19	do.	107 8	4						Do.
234	do.	do.	19	do.	108 8	4						Went well.
235	do.	do.	19	do.	108 8	4						Broke in pieces.
236	do.	do.	19	do.	104 8	4						Do.
237	do.	do.	19	do.	109	4						Went well.
238	do.	do.	19	do.	109	4						Went well; 12° 35'.
	Oct. 11.											Fired into a butt of sand
239	do.	do.	19	do.	108	0						Do.
240	do.	do.	19	do.	108 8	0						Do.
241	do.	do.	19	do.	109	0						Do.
242	do.	do.	19	do.	108	0						Do.
243	do.	do.	19	do.	107	0						Do.
244	do.	do.	19	do.	109	0						Do.
245	do.	do.	19	do.	109	0						Do.
246	do.	do.	19	do.	109	0						Do.
247	do.	do.	19	do.	109	0						Went well.
248	do.	do.	19	do.	106	7						Do.
249	do.	do.	19	do.	106	7						Shot broke.
250	do.	do.	19	do.	109	7						Cap came off.
251	do.	do.	19	do.	107	7						Do.
252	do.	do.	19	do.	108	8						Went well.
253	do.	do.	19	do.	108	8						Do.
254	do.	do.	19	do.	109	7						One large piece came off.

925	do	19	do	110	0	.....	Fired into a butt of sand.
926	do	19	do	108	8	0	Do.
927	do	19	do	108	8	0	Do.
928	do	19	do	112	0	0	Do.
929	do	19	do	110	0	0	Do.
930	do	19	do	110	0	0	Do.
931	do	19	do	107	0	0	Do.
932	do	19	do	108	8	0	Went well; piece came off.
933	do	19	do	108	8	0	Went well.
934	do	19	do	110	8	0	Do.
935	do	19	do	108	8	0	Went well; one piece came off.
936	do	19	do	108	8	0	Went well; several small pieces came off.
937	do	19	do	108	8	0	Went very well.
938	do	19	do	110	8	0	Do.
939	do	19	do	110	8	0	Do.
940	do	19	do	108	8	0	Fired into a butt of sand.
941	do	19	do	110	0	0	Do.
942	do	19	do	110	8	0	Piece came off.
943	do	19	do	111	8	0	Went well.
944	do	19	do	104	8	0	Do.
945	do	19	do	110	8	0	Do.
946	do	19	do	110	8	0	Do.
947	do	19	do	110	8	0	Do.
948	do	19	do	110	8	0	Do.
949	do	19	do	110	8	0	Do.
950	do	19	do	110	8	0	Do.
951	do	19	do	110	8	0	Do.
952	do	19	do	110	8	0	Do.
953	do	19	do	108	8	0	Do.
954	do	19	do	104	8	0	Hand came off.
955	do	19	do	108	8	0	Went well.
956	do	19	do	106	8	0	Do.
957	do	19	do	106	8	0	Do.
958	do	15	do	119	8	0	Flight irregular.
959	do	19	do	119	8	0	Do.
960	do	19	do	119	8	0	Flight very irregular.
961	do	19	do	126	8	0	Flight irregular.
962	do	19	do	128	8	0	Do.
963	do	19	do	127	8	0	Do.
964	do	19	do	128	8	0	Went well.
965	do	19	do	129	8	0	Went well; small piece of lead came off.
966	do	19	do	129	8	0	Went well; lead came off.
967	do	19	do	130	8	0	Do.
968	do	19	do	124	8	0	Flight not perfectly regular; lead came off.
969	do	19	do	122	8	0	do.
970	do	19	do	124	8	0	Do.
971	do	13	do	125	8	0	Flight irregular.
972	Schenke	do	do	125	8	0	Do.
973	do	19	do	125	8	0	Do.
974	do	19	do	125	8	0	Do.
975	do	19	do	125	8	0	Fired into a butt of sand.
976	Hotchkiss	do	do	125	0	0	Do.
977	do	19	do	121	0	0	Do.

Target record of firing with Ames's wrought-iron seven-inch gun, at Bridgeport, Connecticut—Continued.

Order of fire.	Time.	POWDER.		PROJECTILE.		Elevation.	Pressure.	Velocity.	Range.	Recoil.	Time of flight.	Remarks.
		Kind.	Weight.	Kind.	Weight.							
	1864.		Lbs. oz.		Lbs. oz.							
307	Oct 12.	Hazard's No. 7.	19	Hotchkiss	134 8	8°						Went well; slightly irregular.
308	do.	do.	19	do.	134 8	0						Fired into a bank of sand.
309	do.	do.	19	do.	132 8	0						Do.
310	do.	do.	19	do.	134 8	0						Do.
311	do.	do.	19	do.	133	0						Do.
312	do.	do.	19	do.	131	0						Do.
313	do.	do.	19	do.	132 8	0						Do.
314	do.	do.	19	do.	134	8						No pieces; not perfectly regular.
315	do.	do.	19	do.	131	8						do.
316	do.	do.	19	do.	133	8						Quite irregular.
317	do.	do.	19	do.	135	8						Went well.
318	do.	do.	19	do.	131	8						Do.
319	do.	do.	19	do.	134 8	8						Do.
320	do.	do.	19	do.	131 8	8						Do.
321	do.	do.	19	do.	134 8	4						Do.
322	do.	do.	19	do.	133 8	8						Do.
323	do.	do.	19	do.	133 8	8						Do.
324	do.	do.	19	do.	130 8	8						Do.
325	do.	do.	19	do.	132 8	8						Went well.
326	do.	do.	19	do.	131 8	8						Not perfectly regular.
327	do.	do.	19	do.	131 8	8						Went well.
328	do.	do.	19	do.	134 8	8						Do.
329	do.	do.	19	do.	133	8						Not perfectly regular.
330	do.	do.	19	do.	131 8	8						Went well.
331	do.	do.	19	do.	131	8						Do.
332	do.	do.	19	do.	130 8	8						Do.
333	do.	do.	19	do.	135	8						Went well; chasds wet.
334	do.	do.	19	do.	131 8	8						Went well; not perfectly regular.
335	do.	do.	19	do.	131 8	8						do.
336	do.	do.	19	do.	132 8	8						Went well; primer failed—wire broke.
337	do.	do.	19	do.	133	8						Went pretty well; not perfectly regular; small piece came off.
338	do.	do.	19	do.	133	8						Went well.
339	do.	do.	19	do.	133	8						Do.
340	do.	do.	19	do.	134 8	8						Do.
341	do.	do.	19	do.	134 8	8						Do.
342	do.	do.	19	do.	133 8	8						Do.
343	do.	do.	19	do.	133 8	0						Fired into a butt of sand.
344	do.	do.	19	do.	133 8	0						Do.
345	do.	do.	19	do.	134 8	0						Do.

[illegible]

Target record of firing with Ames's wrought-iron seven-inch gun at Bridgeport, Connecticut—Continued.

Order of fire.	Time.	POWDER.		PROJECTILE.		Elevation.	Pressure.	Velocity.	Range.	Recoil.	Time of flight.	Remarks.
		Kind.	Weight.	Kind.	Weight.							
397	1864.				Lbs. oz.	0°						Fired into butt of sand.
398	Oct. 13	Hasard's No. 7.	19	Hotchkiss shot.	119 8	0						Do.
399	do.	do.	19	do.	124 8	0						Do.
400	do.	do.	19	do.	120 8	0						Do.
401	do.	do.	19	do.	116 8	0						Slightly irregular.
402	do.	do.	19	do.	122 10	10						Went well.
403	do.	do.	19	do.	121 8	10						Do.
404	do.	do.	19	do.	125 10	10						Do.
405	do.	do.	19	do.	123 10	10						Do.
406	do.	do.	19	do.	119 10	10						Do.
407	do.	do.	19	do.	121 10	10						Slightly irregular.
408	do.	do.	19	do.	125 10	10						Went well.
409	do.	do.	19	do.	124 10	10						Do.
410	do.	do.	19	do.	124 10	0						Fired into a butt of sand.
411	do.	do.	19	do.	123 0	0						Do.
412	do.	do.	19	do.	125 0	0						Do.
413	do.	do.	19	do.	123 0	0						Do.
414	do.	do.	19	do.	123 0	0						Do.
415	do.	do.	19	do.	124 0	0						Do.
416	do.	do.	19	do.	122 0	0						Do.
417	do.	do.	19	do.	122 0	0						Do.
418	do.	do.	19	do.	121 0	0						Went well.
419	Oct. 14	do.	20	do.	123 8	8						Went well; slightly irregular.
420	do.	do.	20	do.	122 8	8						Went well.
421	do.	do.	20	do.	121 8	8						Do.
422	do.	do.	20	do.	121 8	8						Went well; slightly irregular.
423	do.	do.	20	do.	120 8	8						Went well.
424	do.	do.	21	do.	123 8	8						Do.
425	do.	do.	21	do.	123 8	8						Went well; slightly irregular.
426	do.	do.	21	do.	123 8	8						Went well.
427	do.	do.	21	do.	121 8	8						Irregular.
428	do.	do.	21	do.	121 8	8						Went well.
429	do.	do.	22	do.	121 8	8						Do.
430	do.	do.	22	do.	121 8	8						Went well; slightly irregular.
431	do.	do.	22	do.	125 8	8						Went well.
432	do.	do.	22	do.	124 8	8						Do.
433	do.	do.	22	do.	124 8	8						Do.
434	do.	do.	22	do.	124 8	8						Do.
435	do.	do.	23	do.	123 8	8						Do.

[illegible]

HEAVY ORDNANCE.

Order of fire.	Time.	POWDER.		PROJECTILE.		Elevation.	Pressure.	Velocity.	Range.	Recoil.	Time of flight.	Remarks.
		Kind.	Weight.	Kind.	Weight.							
488	1864	Hazard's No. 7.	Lbs. oz.	Hotchkiss shol.	Lbs. oz.	0°						Fired into a butt of sand.
489	do.		20		194	0						Do.
490	do.		20		122	0						Do.
491	do.		20		122	0						Do.
492	do.		20		122	0						Do.
493	do.		20		121	8						Do.
494	do.		20		194	0						Went well.
495	do.		20		123	8						Went well; slightly irregular.
496	do.		20		123	8						Do.
497	do.		20		124	8						Do.
498	do.		20		123	8						Do.
499	do.		20		123	8						Do.
500	do.	Hazard's No. 7.	20	Hotchkiss shol.	194	0						Fired into a butt of sand.
501	do.		20		123	8						Do.
502	do.		25		123	8						Do.
503	do.		25		123	8						Do.
504	do.		25		123	10						Do.
505	do.		25		123	10						Do.
506	do.		25		119	8						Do.
507	do.		25		123	8						Do.
508	do.		25		123	8						Do.
509	do.		25		124	8						Do.
510	do.		25		125	8						Do.
511	do.		25		122	8						Do.
512	do.	Hazard's No. 7.	25	Hotchkiss shol.	123	8						Fired into a butt of sand; top of vent-plug broke off about one inch of top part.
513	do.		25		122	8						Fired into a butt of sand.
514	do.		25		125	8						Do.
515	do.		25		124	8						Do.
516	do.		25		122	8						Do.
517	do.		25		123	8						Do.
518	do.		25		109	8						Do.
519	do.		25		122	8						Do.
520	do.		25		121	8						Do.
521	do.		25		123	8						Went well.
522	do.		25		122	8						Do.
523	do.		25		123	8						Went well; small piece of lead flew off from shot.
524	do.		25		124	8						Do.
525	do.		25		124	8						Do.

526	do	do	25	124	8	do	do	do	Do.
527	do	do	25	108	8	do	do	do	Do.
528	do	do	25	124	8	do	do	do	Do.
529	do	do	25	108	8	do	do	do	Do.
530	do	do	25	107	8	do	do	do	Do.
531	do	do	25	123	8	do	do	do	Do.
532	do	do	25	124	8	do	do	do	Do.
533	do	do	25	122	8	do	do	do	Do.
534	do	do	25	122	8	do	do	do	Do.
535	do	do	25	107	8	do	do	do	Do.
536	do	do	25	107	8	do	do	do	Do.
537	do	do	25	119	8	do	do	do	Do.
538	do	do	25	121	8	do	do	do	Do.
539	do	do	25	118	8	do	do	do	Do.
540	do	do	25	121	0	do	do	do	Do.
541	do	do	25	125	0	do	do	do	Do.
542	do	do	25	122	0	do	do	do	Do.
543	do	do	25	123	0	do	do	do	Do.
544	do	do	25	118	0	do	do	do	Do.
545	do	do	25	121	0	do	do	do	Do.
546	do	do	25	120	0	do	do	do	Do.
547	do	do	25	121	0	do	do	do	Do.
548	do	do	25	121	0	do	do	do	Do.
549	do	do	25	125	0	do	do	do	Do.
550	do	do	25	110	0	do	do	do	Do.
551	do	do	25	121	0	do	do	do	Do.
552	do	do	25	111	8	do	do	do	Do.
553	do	do	25	122	0	do	do	do	Do.
554	do	do	25	121	0	do	do	do	Do.
555	do	do	25	107	8	do	do	do	Do.
Oct 19	do	do	25	123	30	6,645 yds.	344 sec.	Do.	Do.
556	do	do	25	121	8	8,355	344	Went well.	Do.
557	do	do	25	120	30	8,455	344	Went slightly irregular.	Do.
558	do	do	25	118	30	do	do	Do.	Do.
559	do	do	25	118	30	do	do	Do.	Do.
560	do	do	25	118	30	do	do	Do.	Do.
561	do	do	25	119	8	do	do	Do.	Do.
562	do	do	25	120	8	8,355 yds.	34 sec.	Slightly irregular.	Do.
563	do	do	25	109	8	do	do	Do.	Do.
564	do	do	25	108	8	8,700 yds.	344	Do.	Do.
565	do	do	25	108	8	do	do	Do.	Do.
566	do	do	25	108	25	6,680 yds.	35 sec.	Quite irregular.	Do.
567	do	do	25	123	25	7,295	264	Went well.	Do.
568	do	do	25	123	25	7,300	28	Slightly irregular.	Do.
569	do	do	25	122	25	7,425	29	Do.	Do.
570	do	do	25	122	25	6,300	30	Went well.	Do.
571	do	do	25	125	20	6,045	25	Slightly irregular.	Do.
572	do	do	25	122	20	6,650	244	Do.	Do.
573	do	do	25	124	20	6,770	25	Do.	Do.
574	do	do	25	123	20	do	244	Do.	Do.
575	do	do	25	122	20	do	244	Do.	Do.
576	do	do	25	123	15	do	20	Do.	Do.
577	do	do	25	125	15	do	20	Do.	Do.

Went irregularly.

Went well.

Shot broke into many fragments.
Fired into a butt of sand.Fired into a butt of sand; primer failed.
Fired into a butt of sand.Fired into a butt of sand; sponge staff broke off in head.
Fired into a butt of sand.

Went well.

Went slightly irregular.

Went well.

Slightly irregular.

Quite irregular.

Went well.

Slightly irregular.

Do.

Went well.

Slightly irregular.

Do.

Do.

Do.

Do.

Do.

Do.

Do.

Target record of firing with Ames's wrought-iron seven-inch gun at Bridgeport, Connecticut—Continued.

Order of fire.	Time.	POWDER.		PROJECTILE.		Elevation.	Pressure.	Velocity.	Range.	Recoil.	Time of flight.	Remarks.
		Kind.	Weight.	Kind.	Weight.							
578	Oct. 19	Harvard's No. 7.	Lbs. oz.	Hochkiss shot.	Lbs. oz.	15°					194 sec.	Slightly irregular.
579	do.	do.	25	do.	124	15					20	Do.
580	do.	do.	25	do.	123	15					20	Very irregular.
581	do.	do.	25	do.	122	15						Do.
582	do.	do.	25	do.	121	15						Do.
583	do.	do.	25	do.	122	10						Do.
584	do.	do.	25	do.	123	10						Fired into a butt of sand.
585	do.	do.	25	do.	124	0						Do.
586	do.	do.	25	do.	121	10						Slightly irregular.
587	do.	do.	25	do.	122	10						Went well; small pieces came off.
588	do.	do.	25	do.	123	10						Do.
589	do.	do.	25	do.	120	8						Went well.
590	do.	do.	25	do.	124	8						Do.
591	do.	do.	25	do.	123	10						Do.
592	do.	do.	25	do.	124	10						Fired into a butt of sand.
593	do.	do.	25	do.	120	8						Do.
594	do.	do.	25	do.	123	8						Do.
595	do.	do.	25	do.	125	8						Do.
596	do.	do.	25	do.	123	0						Fired into a butt of sand; vent closed up.
597	do.	do.	25	do.	123	0						Fired into a butt of sand.
598	do.	do.	25	do.	126	10						Went slightly irregular.
599	do.	do.	25	do.	125	8						Fired into a butt of sand.
600	do.	do.	25	do.	122	0						Do.
601	Oct. 20	do.	25	do.	123	30			7,735 yds.		35 sec.	Went well.
602	do.	do.	25	do.	122	30			7,385		36.2 sec.	Do.
603	do.	do.	25	do.	125	30			8,900		27.0	Went very irregularly.
604	do.	do.	30	do.	125	30					33	Went irregularly.
605	do.	do.	30	do.	121	334					33.5	Do.
606	do.	do.	30	do.	123	334					34.5	Do.
607	do.	do.	30	do.	123	334						Went slightly irregular.
608	do.	do.	30	do.	123	334						Went well.
609	do.	do.	25	do.	125	334			6,750 yds.		37 sec.	Went slightly irregular.
610	do.	do.	25	do.	125	8			7,060		38.2	Went slightly irregular.
611	do.	do.	25	Hochkiss shell.	106	8			8,150		38.2	Went well.
612	do.	do.	25	do.	105	344			8,250		38.2	Went slightly irregular.
613	do.	Unson.	25	do.	107	34			8,640		38.2	Went well.
614	do.	Harvard's No. 7.	25	Hochkiss shot.	124	0			8,196		38.25	Fired into a butt of sand.
615	do.	do.	25	Hochkiss shell.	106	8						Went irregularly.

617	do	do	do	20	106	131	131	131	do	Went irregularly; piece came off.
618	do	do	do	20	106	131	131	131	do	Went well.
619	do	do	do	20	127	131	131	131	do	Went irregularly.
620	do	do	do	25	127	131	131	131	do	do.
621	do	do	do	20	125	131	131	131	do	Went well; slightly irregular.
622	do	do	do	20	125	131	131	131	do	do.
623	do	do	do	20	121	131	131	131	do	do.
624	do	do	do	25	125	131	131	131	do	Went irregularly.
625	Cannon	do	do	25	122	131	131	131	do	Went well.
626	do	do	do	25	121	131	131	131	do	do.
627	do	do	do	25	123	131	131	131	do	Went irregularly.
628	do	do	do	25	122	131	131	131	do	Broke.
629	do	do	do	25	106	131	131	131	do	Went well; slightly irregular.
630	do	do	do	25	126	131	131	131	do	Went irregularly.
631	do	do	do	25	134	131	131	131	do	Went well.
632	do	do	do	25	134	131	131	131	do	do.
633	do	do	do	25	124	131	131	131	do	Went well; slightly irregular.
634	do	do	do	25	121	131	131	131	do	Went irregularly.
635	do	do	do	25	122	131	131	131	do	Went well; slightly irregular.
636	do	do	do	25	121	131	131	131	do	Went very regularly.
637	do	do	do	25	121	131	131	131	do	Went well.
638	do	do	do	25	123	131	131	131	do	do.
639	do	do	do	25	121	131	131	131	do	do.
640	do	do	do	25	124	131	131	131	do	Went very irregularly.
641	do	do	do	25	124	131	131	131	do	Went well.
642	do	do	do	25	123	131	131	131	do	Went well; slightly irregular.
643	do	do	do	25	124	131	131	131	do	Went well.
644	do	do	do	25	124	131	131	131	do	do.
645	do	do	do	25	123	131	131	131	do	Went well; slightly irregular.
646	do	do	do	25	123	131	131	131	do	do.
647	do	do	do	25	122	8	131	131	do	Went irregularly. Copper 1 inch thick.
648	do	do	do	20	121	8	131	131	do	Went well. Copper 0.75 inch thick.
649	do	do	do	20	125	131	131	131	do	Went well; slightly irregular.
650	do	do	do	20	125	131	131	131	do	do.
651	do	do	do	25	122	8	131	131	do	Went irregularly.
652	do	do	do	25	125	131	131	131	do	do.
653	do	do	do	20	123	8	131	131	do	Went well; slightly irregular.
654	do	do	do	20	112	131	131	131	do	Went well; small piece came off.
655	do	do	do	20	111	8	131	131	do	do.
656	do	do	do	20	112	8	131	131	do	do.
657	do	do	do	20	111	8	131	131	do	do.
658	do	do	do	20	117	18	131	131	do	Went irregularly.
659	do	do	do	20	115	90	131	131	do	do.
660	Cannon	do	do	20	107	131	131	131	do	Went well; not perfectly regular.
661	do	do	do	20	106	131	131	131	do	do.
662	do	do	do	20	108	131	131	131	do	Went well.
663	do	do	do	20	125	8	131	131	do	Went well; not perfectly regular.
664	do	do	do	20	125	131	131	131	do	do.

Target record of firing with Ames's wrought-iron seven-inch gun at Bridgeport, Connecticut—Continued.

Order of fire.	Time.	POWDER.		PROJECTILE.		Elevation.	Pressure.	Velocity.	Range.	Recoil.	Time of flight.	Remarks.
		Kind.	Weight.	Kind.	Weight.							
1864			Lbs. oz.		Lbs. oz.							
669	Oct. 25	Cannon	20	Hotchkiss shot	123	13°						Went well; many pieces flew off.
670	do	do	20	do	123	13						Went well; a little irregular.
671	do	do	20	do	124	13						Went well.
672	do	do	20	do	126	31						Do.
673	do	do	20	do	125	31						Do.
674	do	do	20	do	124	8						Went well; very slightly irregular.
675	do	do	25	do	123	8						Went well.
676	do	do	25	do	125	13						Do.
677	do	do	25	do	124	13						Do.
678	do	do	25	do	123	13						Do.
679	do	Cannon & mortar	25	do	123	13						Went well; 10 lbs. cannon powder at bottom of
680	Oct. 26	Cannon	25	Gillmore	124	4						Slightly irregular; } bag and 15 lbs. cannon on top of it.
681	do	do	25	do	124	4						Slightly irregular.
682	do	do	25	Hotchkiss	125	304			8,270 yds.			Do.
683	do	do	25	do	125	304						Went well.
684	do	do	25	do	126	304						Do.
685	do	do	25	Mann's	96	304						Do.
686	do	do	25	do	96	304						Went irregularly.
687	do	do	25	Hotchkiss	124	304			8,600 yds.			Do.
688	do	do	20	do	106	304						Went well.
689	do	do	20	do	107	304			6,425 yds.			Do.
690	do	do	20	do	125	304						Do.
691	do	do	20	do	120	304						Do.
692	do	do	20	do	124	304						Do.
693	do	do	20	do	126	304						Do.
694	do	do	25	do	126	304						Do.
695	do	do	25	do	125	304			6,400 yds.			Do.
696	do	do	25	do	126	304			6,335			Went well; slightly irregular.
697	do	do	25	do	126	304			8,140 yds.			Went well.
698	do	do	25	do	124	304			7,885			Went well; slightly irregular.
699	do	do	25	do	123	304						do.
700	do	do	25	do	125	304						Do.

Measurements of the bore of Ames's wrought-iron rifle gun.

Distance from muzzle.	DIAMETER OF THE BORE AFTER—							
	0 rounds.	100 rounds.	210 rounds.	300 rounds.	400 rounds.	500 rounds.	600 rounds.	700 rounds.
<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
136	7.027	7.000	7.020	7.027	7.049	7.055	7.070	.....
134	.034	.014	.023	.042	.069	.068	.085	.....
132	.037	.018	.028	.045	.075	.070	.075	.....
130	.037	.024	.043	.053	.080	.080	.098	.....
128	.033	.073	.068	.074	.076	.083	.190	.....
126	.034	.087	.076	.091	.092	.105	.134	.....
124	.028	.121	.083	.136	.122	.138	.183	.....
122	.032	.087	.089	.089	.116	.134	.197	.....
120	.040	.108	.097	.110	.158	.197	.300	.....
						200 }		
118	.033	.057	.049	.051	.103	.142 }	.300	.300
						206 }		
116	.032	.052	.048	.048	.074	.123	.273	.300
114	.030	.042	.040	.037	.054	.079	.272	.300
112	.024	.035	.036	.034	.053	.067	.292	.220
110	.022	.030	.030	.028	.050	.060	.124	.171
108	.019	.028	.027	.021	.047	.053	.105	.128
106	.017	.024	.027	.030	.056	.049	.084	.099
104	.016	.023	.024	.029	.039	.046	.078	.083
102	.015	.022	.024	.027	.036	.040	.058	.064
100	.015	.019	.022	.024	.033	.034	.046	.053
98	.015	.017	.021	.024	.031	.032	.038	.047
96	.015	.020	.020	.024	.030	.033	.037	.045
94	.015	.021	.021	.024	.030	.036	.040	.043
92	.021	.021	.023	.032	.034	.031	.034	.043
90	.017	.018	.019	.026	.030	.027	.030	.037
88	.017	.018	.019	.026	.030	.026	.030	.033
86	.018	.018	.017	.026	.026	.024	.038	.030
84	.017	.016	.018	.022	.024	.023	.025	.027
82	.017	.017	.....	.022	.022	.021	.024	.026
80	.017	.018	.....	.022	.021	.018	.024	.027
70	.018	.016	.....	.....	.022	.017	.020	.023
60	.017	.017	.....	.....	.018	.016	.019	.023
50	.018	.016	.....	.....	.017	.015	.018	.023
40	.015	.017	.....	.....	.018	.016	.017	.023
30	.015	.....	.....	.....	.018	.017	.018	.023
20	.016	.....	.....	.....	.017	.015	.017	.021
10	.016	.....	.....	.....	.016	.015	.017	.021

WASHINGTON, *January*, 21, 1865.

Captain G. V. Fox, Assistant Secretary of the Navy, sworn and examined.

By the chairman :

Question. In the light of all your observation and experience in the navy with heavy ordnance, which do you consider to be the best gun now known ?

Answer. The best shell gun is Admiral Dahlgren's nine and eleven inch guns. Those will not bear rifling. The Parrott rifled gun has burst so often that many of our officers and men have less confidence in it. It is a great risk to use it with the present charges. In my opinion, the result is that we must have a wrought-iron gun, and Mr. Ames, in my opinion, has made the best wrought-iron gun in the world.

Question. Is there any American inventor of wrought-iron guns, except Mr. Ames; and if so, who ?

Answer. I do not know of anybody else who has been successful. Captain Ericsson made us a gun, and though it has not burst, it is opening so as to render its use dangerous. The plan of longitudinal forging in one piece has no safety in its results.

Question. Do you know anything about the Armstrong and Whitworth guns ?

Answer. We have a Whitworth gun in the navy yard, but I never saw an Armstrong gun. The Whitworth gun is of steel, with a wrought-iron band upon it.

Question. Do you consider that as good as the Ames gun ?

Answer. I do not.

Question. You say the Parrott gun has failed frequently. Does that remark apply to any of his guns except the 100-pounders and over ?

Answer. Our experience is with the 100-pounders.

Question. Is there any complaint of the 60-pounders and smaller guns ?

Answer. There is no complaint of any gun which is of small calibre. They are like a pistol, and it makes no difference whether it is made of brass, or iron, or steel.

Question. Do I understand you to mean that the larger the calibre, the greater the danger of bursting ?

Answer. Yes, sir.

Question. Then in reference to our larger guns, the fifteen-inch guns for instance, there is some danger that they will not prove sufficiently strong ?

Answer. Yes, sir; the larger the mass of metal, the more danger there is attached to firing the gun with charges in proportion to its size.

Question. From what you know of Ames's wrought-iron gun, would it bear any charge which you would deem sufficient for our guns of the largest calibre ?

Answer. I think it is a fair inference from the experience we have had with the small guns and 100-pounders which he has made, that he has the correct principle of manufacture, and that guns manufactured by his method will bear any amount of charge that can be consumed in the gun.

Question. It is said that the cost of his gun is about six times that of a cast-iron gun of the same calibre. How is that ?

Answer. He has been making those guns for eighty cents a pound, and he says he can make them now for one dollar a pound. If a fifteen-inch gun weighed 42,000 pounds, it would cost \$42,000, made of wrought-iron, upon his plan. The contract price of a cast-iron gun of the same calibre is \$7,500. But it must be taken into consideration that a wrought-iron gun will last; that there is scarcely any limitation to its endurance, and the calibre will be increased so much that fewer guns will be used.

By Mr. Gooch :

Question. Is not the cost of the gun a small item in the general account, considering the ship and everything else ?

Answer. Certainly. In reference to the cost of the guns, as I said after the disaster at Fort Fisher, where we lost forty-two men killed and wounded by the bursting of guns, better that the guns were of gold than that the sailors should think that, under any circumstances, the guns could burst. You might lose a battle by going into action with a gun around which stood twenty-five men entertaining the idea all the time that it might burst.

By Mr. Odell :

Question. What has been the result of the experience of your department with the guns now in use ?

Answer. We have now in the service about three hundred 100-pound Parrott guns, and I think we have lost nineteen of them by bursting.

Question. Is that a much larger proportion of loss by bursting than should occur ?

Answer. There ought not to have been any, really. I do not think we have had, during the war, a 9 or 11-inch gun burst. I do not recollect of any.

Question. What do you recommend to obviate that serious difficulty ?

Question. My opinion is that we have got to come to wrought-iron or steel guns, and abandon cast-iron.

NAVY DEPARTMENT,

Washington, February 6, 1865.

SIR : I have the honor to acknowledge the receipt of your letter of the 28th ultimo, touching the subject of the draught of a bill relative to the construction of the Ames wrought-iron gun.

In my conversation with the committee, I believe that we agreed as to the necessity of some action on the part of Congress to enable the War and Navy Departments to construct the Ames wrought-iron gun. I am fully and painfully impressed with the importance of taking immediate action in regard to the introduction of wrought-iron guns, but I confess to some hesitation as to the precise method of accomplishing this without recommending a measure, the cost of which would be likely to insure its rejection.

I find, upon inquiry, that Mr. Ames has the machinery and tools necessary to manufacture 6 or 7-inch wrought-iron guns, and the department has directed the bureau of ordnance to contract with Mr. Ames for one 6 $\frac{1}{4}$ -inch wrought-iron gun, (100-pounder,) to weigh about 12,000 pounds, with the assurance that if this gun stands the test, the department will take ten similar ones, making eleven guns in all, at one dollar per pound. This is the least number that he will agree to manufacture, and under the ordinary appropriation for the naval ordnance, the department feels justified in paying this large sum on account of the serious bursting of the cast-iron guns in the attack upon Fort Fisher. This gun, no doubt, will be very successful, and will take the place of the present pivot rifled guns in the navy ; but it does not assist us in obtaining the large smashing gun, which is indispensable against iron-clads, and which finds a temporary substitute in the 15-inch gun of cast-iron.

A gun of that calibre, capable of using safely the greatest quantity of quick-burning powder which can be consumed in the piece, is a desideratum, and no reasonable expense ought to be spared in obtaining it.

The machinery for making such a gun, upon Mr. Ames's principle, will have to be got up and made at considerable expense. Then comes the question of

locality. It will hardly be economical to erect such machinery at Mr. Ames's place, away from tide-water, where the transportation of coal, and such heavy ordnance, will be a most serious item of expense.

I enclose herewith a draught of a bill prepared by the Bureau of Ordnance, but it does not meet my views. I rather incline for a joint resolution, as follows:

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Navy be, and hereby is, authorized to contract for the construction of wrought-iron cannon, after the patent of those lately manufactured by Horatio Ames, and tested before a joint board of military and naval officers: *Provided*, That the eleven guns of similar manufacture ordered by the Naval Bureau of Ordnance shall first be thoroughly tested before a board of ordnance officers, and favorably reported upon, and a further manufacture recommended: *And provided further*, That the contract shall not be for more than one hundred guns; to be paid for on delivery, after a satisfactory test, out of any money in the treasury not otherwise appropriated.

I am, very respectfully, your obedient servant,

G. V. FOX,

Assistant Secretary of the Navy.

Hon. B. F. WADE,

Chairman Com. on Conduct of War, U. S. Senate.

WASHINGTON, January 23, 1865.

Captain JAMES ALDEN sworn and examined.

By the chairman:

Question. What number and calibre of guns had you on board the Brooklyn in your expedition against Fort Fisher?

Answer. We had twenty 9-inch guns, two 100-pounder Parrotts, and two 60-pounder Parrotts—all four of the Parrotts rifled.

Question. How many times were those guns fired in the two attacks upon the fort?

Answer. I threw into that fort 3,400 9-inch shells—over one hundred and twenty tons.

Question. How did the guns bear that shelling?

Answer. As soon as I heard of the 100-pounders bursting, I put mine on the opposite side of the ship from that with which I was fighting, and put in their places the 9-inch guns, so that I had twelve 9-inch guns in battery all the time.

Question. Then you did not use those 100-pounder Parrotts?

Answer. Not after I heard of the accidents with them on the other ships. I never fired them again.

Question. Were those 9-inch guns made on the Rodman principle?

Answer. They were Dahlgren guns.

Question. Were they cast hollow, or otherwise?

Answer. They were the Dahlgren 9-inch guns, the best gun ever made.

Question. What effect had that firing upon them?

Answer. I never discovered that any of them were injured.

Question. Did none of them fail?

Answer. Not in the slightest degree. The men stand around them and fight with them with as much confidence as they drink their grog.

Question. Did you see any of the Parrott guns burst?

Answer. No, sir.

WASHINGTON, *January 29, 1864.*

General JOHN G. BARNARD sworn and examined.

By the chairman :

Question. What is your rank and position in the service?

Answer. My position in the regular service is that of lieutenant colonel of engineers. I am a brigadier general of volunteers.

Question. Where are you now stationed, and what are your duties?

Answer. I am stationed in Washington. I am the chief engineer of the defences of Washington, and have other incidental duties.

Question. What is the character and efficiency of the heavy ordnance now in our fortifications?

Answer. The ordnance in our fortifications now may be said to be in a transition condition, in which nothing is positively settled. We have been displacing the old light guns, such as 24, 32, and 42-pounders, and the 8-inch shell guns, by heavy guns, as rapidly as possible. And, though I have no intimate knowledge of the exact armament of any one of the fortifications now, not having recently been connected with them, I believe that the armament has been increased in efficiency as rapidly as it possibly could have been; and the armament of our sea-coast works is the best armament of any sea-coast works in the world at the present moment.

Question. What changes are being made in the heavy ordnance of the fortifications?

Answer. The most noticeable change is the introduction of the 15-inch gun of Rodman. I might remark here that for twenty-five years past the engineer department have been calling for heavy guns, heavier than the old guns I have mentioned. The difficulty in getting them has been owing to the fact that the means of manufacturing heavy wrought-iron guns has been wanting, and we have waited for the ordnance department. The principle has been that cannon should be used of such calibre that a single shot would destroy a vessel, or inflict serious damage to it, instead of doing comparatively little injury. We know very well that wooden vessels have received an incredible number of 24 and 32-pounder solid shot without being seriously affected. The idea has been to put guns in forts of such calibre that a single shot would do immense damage.

Question. What is the calibre of the new gun?

Answer. The 15-inch smooth-bore, carrying a shell of nearly 400 pounds, or a solid shot of 430 pounds; the 13-inch smooth-bore, carrying a shell of perhaps 250 pounds; the Parrott rifled 300 and 200-pounders, and also some of the Parrott rifled 100-pounders, which we considered too light for sea-coast fortifications. I believe—I have no official knowledge—that the government are making arrangements to alter, or, perhaps, are actually altering now, the old 32 and 42-pounders, by rifling them, to make them efficient rifled guns.

Question. Are they changing the character of the guns on the interior fortifications, there about Washington, for instance?

Answer. Some changes have been ordered recently, to withdraw a great many of those old sea-coast guns, 24 and 32-pounders, with which the works were originally armed, for want of others, and replace them with siege guns and field guns more fitted for field-works. Works of this kind do not require guns of this heavy calibre. We put these in because, at the time we got up the works, there were no others to be had; the demand for field and siege guns for army purposes was so great that we could not get any others.

Those heavy guns were not introduced earlier into our sea-coast fortifications because the means of manufacturing them were not perfected. The engineer department was constantly calling for heavy guns, and through the experiments of the ordnance department in relation to the means of manufacturing cast-iron,

and obtaining the best results from different ores, and the mixture of different ores, &c., great advance has been made in the art of casting cast-iron guns. And, finally, through the invention of Major Rodman, the means of casting guns of enormous calibre have been effected. The difficulty to be overcome was this: When a mass of cast-iron beyond a given diameter cools, the result is, that the outside cools first, and the inside remains in a fluid state; afterwards the inside cools; a contraction takes place in cooling, and a large mass cooling in this way does not contract simultaneously; there is an irregularity of contraction; and there is a great strain upon the interior—so much so that, in cooling, very large guns will oftentimes crack. Captain Rodman invented a process of casting a cannon hollow; the ordinary way being to cast it solid, and then bore it out. By casting a gun hollow, with cold water in the metallic core around which the metal is poured from the furnace, the gun is cooled from the inside; and instead of having to cool a thickness of three feet of metal, which would be the case in cooling from the outside, you have only to cool a thickness of from 12 to 15 inches from the inside. I regard his method as one of the greatest improvements that have been made in the art of manufacturing cast-iron guns, and it has proved a more complete success than any other process of making heavy guns. In fact, without it, guns of more than 10 inches calibre cannot be successfully cast, and they never have been cast anywhere else.

Question. Was that an invention solely of Major Rodman, or was it previously known in Europe?

Answer. The first cast-iron guns, made in the fifteenth century, were cast hollow, and this method was universally practiced till the middle of the eighteenth century, (1744,) when the method of casting solid was introduced. But there was no *principle* recognized in the matter. A cast-iron tube was to be made, and the most natural way was to cast it as a tube. It was afterwards found easier to cast solid and bore out the core. Besides, there was really no advantage in the ancient method of hollow casting. The ordinary substance which forms the internal mould could have no cooling effect. Captain Rodman was the first to discover the necessity of *cooling* from the interior, and providing, in connexion with hollow casting, a means of so cooling the casting.

Question. Have such tests been applied to that particular gun so as to satisfy military men that it is serviceable and useful?

Answer. I think so. I do not say that the gun has been fully proved to be all that a gun should be, or may be made; but it has been so far tested, I think, as to justify an affirmative answer to your question. It has been the most complete success, so far, of any process of making heavy guns in any country.

Question. How long have these guns been in use in this country?

Answer. The first experimental gun was completed in 1860. A board was ordered by the Secretary of War to attend the trial experiments. The board consisted of General Totten, Chief Engineer of the United States army; Major (now General) Anderson; Captain H. G. Wright, of the engineers; myself; Captain Tallmadge, of the artillery; Captain Carlisle, of the artillery, and Captains Dyer and Rodman, of the ordnance, and the traitor Gorgas.

Question. Describe briefly the tests you applied.

Answer. Our test was simply to fire it with ordinary service charges. I should remark that we considered that such a gun could only be really tested by long enough use to show its endurance. We fired it—I do not recollect the exact number of times—I suppose 50 or 60 times, trying it at various elevations, with different charges of powder, never exceeding, I believe, thirty pounds of what Rodman calls his compressed cake powder, which is a very slow burning powder.

Question. You say you tried it with ordinary service charges, such as you would use in battle, both powder and ball?

Answer. Yes, sir; we recommended the continuance of those firings, and after

we left the firing was continued under charge of the ordnance officers, until the number of rounds had reached some 500 or 600, in the same way with ordinary charges. During all this time different tests were applied, in order to ascertain whether the firing had produced any effect upon the gun. You are aware, perhaps, that by repeated firing the interior of the bore, particularly about where the ball rests, wears away. The violent escape of gases about it enlarges the bore, and the touch-hole is enlarged. It was found, so far as my recollection serves, that up to the last time at which I recollect having received any account—after the gun had been fired 500 or 600 times—no perceptible change had taken place in the gun, showing great hardness of the interior surface, as was expected to be derived from cooling it from the inside.

Question. Did you use in those tests the same weight of powder and projectile, in proportion to the calibre, that you do in smaller guns?

Answer. We used a less weight of powder in proportion to the weight of the projectile. In light guns, smooth bores, the ordinary charges of powder are from one-quarter to one-third of the weight of the projectile. As the calibre increases, it has been found that that proportion could not safely be used. In the 10-inch calibres, which had been in use for many years, it was never considered safe to use over fifteen or eighteen pounds of ordinary cannon powder, which would be about one-sixth of the weight of the shot. In the 15-inch guns, in which the shell used weighs about 400 pounds, it was not considered safe to use over forty or fifty pounds of Rodman's slow-burning powder, about one-eighth or one-ninth of the weight of the projectile. Most of the shells he was using at that time did not weigh over 350 pounds.

Question. What was the range of those guns, with such charges, at an elevation, say, of five degrees?

Answer. At five degrees we got pretty much the same result as with other smooth-bore guns—about 1,800 yards, if I recollect aright. At six degrees we got about 2,000 yards. At low elevations the range is not superior, perhaps not so great, as that of a 32 or 42-pounder. At high elevations the range is somewhat superior.

Question. How do you account for that?

Answer. From the fact that we use proportionately less powder and give less initial velocity. If we could get the same initial velocity with all those heavy guns that we do with the 24 and 32-pounders, we could get much greater range, from the fact that the resistance of the atmosphere to a large sphere is less in proportion to its weight than to a small sphere. But for the resistance of the atmosphere we could throw a ball fifteen or twenty miles with an ordinary piece of artillery.

Question. Consequently, the energy and efficiency of these large guns are not in proportion to the weight of the projectile? It is not propelled with the same initial velocity?

Answer. That is certainly an objection. It would be very desirable to throw them with as great a velocity as we can throw a six-pound ball, and perhaps it may yet be done.

Question. Could it not be done, provided you could use the same proportion of powder to the weight of the projectile?

Answer. I think it could.

Question. It has been suggested that those large 15-inch guns are inefficient, for the reason that they dare not put in powder enough to make them effective. What do you say in regard to that?

Answer. The gun which was adopted in the navy—although it is essentially a Rodman gun—is not of his model. It was, if I mistake not, made shorter, in order to introduce into monitors—I am not quite certain about the fact—and made of somewhat lighter dimensions than the Rodman gun; but experiments at the Washington navy yard, with a Rodman gun of navy pattern, indicate that

these 15-inch guns are really capable of bearing much heavier charges than was supposed. One of these guns has been fired a great many times with 611 pounds of *ordinary cannon powder*—one-sixth to one-seventh the weight of the shot. If such charges are shown to be safe, quite high initial velocities may be had with these guns.

Question. Are those Rodman guns manufactured by anybody but Major Rodman, that you know of?

Answer. Major Rodman does not manufacture himself. They are manufactured by Knap, Rudd & Co., of Pittsburg, who are, if I mistake not, the owners of the patent. They are manufactured by Alger & Co., in Boston, and they are now manufactured in Providence, and there may be others now who manufacture them.

Question. Have you any idea how many of those large 15-inch guns we now have in the service?

Answer. I cannot give you any definite statement as to that.

Question. You say you were on the board that tested those guns. In your opinion have they been sufficiently tested now, so that it would be prudent for the government to adopt them to supersede other guns; are you yourself so far satisfied with the tests and experience of those guns?

Answer. I am satisfied that the government should adopt them to a certain extent. I do not say, by any means, that I would propose to make the whole armament of the fortifications of such guns, but I consider them the most powerful class of cast-iron guns that there is, and a very important gun—the best gun of its peculiar class that there is; we know of nothing that we could put in its place. At the same time it ought to be perfectly understood that the art of artillery is in transitu; that the demand has outstripped the march of science; that to perfect artillery and bring it up to what is now demanded, requires experiment and laborious research, and we must use the best we can get and run some risks. But so far, I have never heard of one of those guns bursting, nor of any accident from them.

Question. Has any more than the service charge ever been used in them?

Answer. They have been tested at the navy yard here with heavier charges, sixty pounds of ordinary cannon powder, and it is probable they may be safely used with this charge.

Question. You have spoken of the powder you use in those guns, a coarse powder; is that a new invention?

Answer. I think it is an invention of Captain Rodman. His opinion was that the ordinary cannon powder burned too rapidly for these great guns; the effort at the very commencement was too violent—was not distributed along the length of the bore. By using a slower burning powder the first effort was less violent, but it kept up a more continuous effort. Captain Rodman made two kinds of powder, one of very large grains, almost if not quite as big as hazelnuts, and another kind in compressed perforated cakes. The latter kind has never been adopted practically; it costs a great deal more to make it than the other kind.

Question. Does this coarse powder propel a ball with the same force that the old-fashioned powder would?

Answer. the perforated cake powder requires a heavier charge than the large-grained powder, and the large-grained powder requires a heavier charge than the ordinary cannon powder, to obtain the same result.

Question. Do all these great grains burn?

Answer. I do not think they do; many are thrown out not fully burned.

Question. Now, in regard to the matter of "royalty;" what "royalty," and to whom, does the government pay for these guns?

Answer. I know nothing about that.

Question. Then you don't know about the amount of "royalty" that the government pays for those guns?

Answer. Not at all.

Question. That, I suppose, is what is paid by the government to the inventor or discoverer for the use of his patent.

Answer. I do not even know that the government pays anything. I have never heard anything about it.

Question. Those Rodman guns are always smooth-bore?

Answer. They are; but not necessarily so. After the first experimental gun, another was made immediately afterwards of the same pattern exactly, of the same exterior dimensions, and rifled. That gun was sent to Fortress Monroe at the beginning of the rebellion; one or two shots were fired from it by General Butler at the enemy's works on Sewell's Point, and there it lay for a year or two. I have heard that the ordnance department were lately beginning experimenting with it. I saw that Mr. Parrott was making some projectiles for it; what the result has been I do not know.

Question. But with that exception, they are smooth-bore guns.

Answer. Yes, sir; that is, these large guns.

Question. How small guns do they make on this Rodman principle?

Answer. They apply that method of casting to the 10-inch guns, and anything above that, and Mr. Parrott is now applying it to his 300-pounder rifled gun.

Question. Would not that method applied be an improvement in casting all our ordnance, take the Dahlgren gun for instance?

Answer. Yes, sir; anything above an 8-inch gun; perhaps anything above a 42-pounder; perhaps the 42-pounder itself. But below that the evil which I spoke of in the cooling of the casting is not so apparent; you can get a very satisfactory gun of the 32 or 42-pounder calibre by the method of solid casting.

Question. Do you know enough about the manufacture of these guns to be able to state whether they can be made as cheaply as the others, barring the "royalty" to the inventor? In other words, which is the cheapest, to cast guns hollow upon this Rodman principle, or cast them solid, and bore them out in the old way?

Answer. I do not think it would make very much difference. It costs rather more, probably, to make them hollow; the amount of the labor of boring is about the same in both cases, although in the one case you have the hollow core. The founders tell me that they would about as willingly bore out a gun cast solid as one cast hollow.

Question. This method of cooling from the inside leaves the interior surface harder than it otherwise would be, and, therefore, you have to work the harder to finish out the bore?

Answer. Yes, sir.

Question. Which gun do you consider the most energetic and efficient, the Rodman or the Parrott gun?

Answer. They both have their peculiar qualities; we consider them both necessary. That is, we consider both smooth-bores and rifled guns necessary?

Question. The Parrott gun has always heretofore been a rifled gun?

Answer. Yes, sir. The Parrott gun is of smaller diameter in proportion to the weight of its projectile, and simply for the purpose of penetrating armor, making a hole through it, it is superior to a smooth-bore of larger calibre. But we believe that for smashing in the frame of a vessel the large round shot would be superior; in fact, all experiment, here and abroad, shows that a round shot is more destructive to iron plates than an elongated one. We believe that greater damage would be done by a 15-inch round shot, than by the 300-pounder Parrotts. But the 300-pounder Parrott has a greater range and accuracy than the other. You can throw a 300-pounder Parrott $2\frac{1}{2}$ and 3 miles with a great deal of accuracy. Whereas, at that distance, a smooth-bore gun would

not hit anything; you may throw your shot that distance, but you have no certainty of hitting the object fired at. But within the distance of a mile, the accuracy of a smooth-bore is quite sufficient, and its effect would probably be greater. On the other hand, the 300-pounder Parrott gun is a lighter gun than the 15-inch gun, and more easily handled.

Question. Do you know which is the most expensive gun according to the weight of its projectile, the Rodman gun, or the Parrott gun?

Answer. The Rodman gun, I think.

Question. How about the Dahlgren gun?

Answer. The Dahlgren guns are all intended for the navy. I do not know of any of them suited for the land service.

Question. We are in a transition state, I understand you to say, in regard to ordnance, and are replacing our old coast guns with these Rodman and Parrott guns?

Answer. Yes, sir; and rifling the old guns, as I understand.

Question. I understand they are doing that for the land service, but the navy has not adopted that plan as yet?

Answer. The fact of the matter is, that we must have more powerful guns than our old ones, and we must get them some way as fast as we can.

Question. We are directed to inquire what proportion of our sea and land ordnance is rifled. Can you tell about that?

Answer. I cannot answer that question. I presume it depends upon what we can get. There has been a great call from the large cities, New York and Boston, and great pressure upon the government to supply improved artillery; and the government has supplied it as fast as they could get it from Parrott and the different foundries. What the proportion of rifled guns is, I could not say. I do not think any rule has been established yet.

Question. When were these rifled guns first introduced into our service?

Answer. I do not think we had any rifled guns in the service before this war commenced. General Barry is better authority on that point than I am. We commenced about that time to make rifled guns. If I recollect right, no heavy rifled gun had been made in 1860, except this 12-inch gun at Fortress Monroe, which I have spoken of. Mr. Parrott gradually perfected his means of manufacturing his heavy guns, succeeding first in making a 100-pounder, then a 200-pounder, and finally a 300-pounder. Therefore, it has been within the space of two years that heavy rifled ordnance has been made.

Question. How long have heavy rifled guns been in use abroad—say in England and France?

Answer. About contemporaneously with us. They had commenced rifling their field artillery and introducing it into service earlier. I do not recollect now of hearing of any heavy rifled guns before we commenced having them; probably, however, Armstrong's 100-pounders are a year or two earlier than Parrott's 100-pounders. We were rifling our cast-iron 32s and 42s as early as 1859 or 1860.

Question. Have you a knowledge of the heavy ordnance now in use in France and England—their latest improvement in heavy guns? If so, I would inquire whether they have any gun which, in your judgment, is superior to our Rodman or Parrott gun?

Answer. The most powerful gun that I have read of as being experimented upon, is the last gun of Armstrong, a rifled gun of 13-inch calibre, and throwing a 600-pound projectile. The accounts of its effects and accuracy were very satisfactory; but we have nothing to show how durable the gun would be.

Question. Is that a breech-loading gun?

Answer. It is not a breech-loading gun. There is a great deal of discrepancy about the accounts we get of the Armstrong gun; at any rate, no Armstrong or other foreign gun has undergone the practical tests that our guns have. I do not think they have made anything equal, in durability and

efficiency combined, to the Parrott gun. Some of the English journals give very flattering comments upon our rifled artillery, as known by the result of the bombardment at Charleston.

Question. It has been said that they were thrown by their Armstrong guns?

Answer. There is a different opinion about that gun. The original breech-loading Armstrong gun I never had any faith in, and the building-up principle upon which he makes his guns I do not think has proved very satisfactory so far. As to the French guns, I have heard of nothing larger than the guns which they have upon their iron-clads, called 30-pounders, and is their old 30-pounder cast-iron gun rifled and reinforced by a band at the breech, and throws an elongated projectile of about 54 pounds weight. They are supposed to be making, or at least experimenting upon, larger rifled guns; but keep their results secret.

Question. The Senate, in this resolution, wants to know if there has been any particular delay in the manufacture and introduction of these guns; and if so, the cause of it. Do you know of any delay?

Answer. No, sir; I have had nothing to do with the manufacture and supplying of them.

Question. You have heard of no particular delay in the matter?

Answer. I have heard that everybody in the country that could make a gun was employed, to meet the demands of the government.

Question. I will ask one question about the manufacturing of these guns: does it require great outlay to establish a manufactory of these guns? Is such a manufactory a costly and expensive concern?

Answer. It requires considerable outlay in machinery for lifting and handling these great guns.

Question. What, under favorable circumstances, would be the expense of setting up such a manufactory?

Answer. I could not tell; it would take a great deal of money. In regard to the delay, I will say, that the only delay I know about was in first commencing the manufacture of these 15-inch guns. The engineer department desired them to be made; and a board sat here upon the subject two years ago, which adopted them for the armament of fortifications, and desired them to be made; but none was made or ordered until after the Merrimac affair, when the authorities seemed to receive a new impulse.

By Mr. Gooch:

Question. All things considered, what do you consider the best rifled gun known to the world?

Answer. I have not the data upon which to answer this question. To the best of my knowledge no rifled gun of large calibre has yet satisfied all the conditions of durability. Parrott's guns have not; and yet I believe it to be equal to any rifled gun made, and have confidence that the defects may be remedied. Yet I see no reason why we may not make large rifled guns of cast-iron alone, by Rodman's method, as successfully as we have made large smooth-bore ones; indeed, it seems to me a much easier problem to make a 400-pounder cast-iron rifled gun than to make a 15-inch smooth-bore gun. In range and accuracy and efficiency combined, I believe Parrott's guns to have equalled any in the world. To breach masses of masonry at the distance Fort Sumter was breached (two miles and over) was certainly an extraordinary performance; and yet, from what I saw of these guns at Yorktown, where we contended with the enemy's rifled guns at 3,900 yards, (2½ miles nearly,) and received some of his shot in the parapet of our battery, the result did not surprise me. Some of Parrott's heavy rifles have endured over a thousand discharges, at high elevations and with full service charges; but I apprehend they are not all so durable. I have heard of no failures in his 300-pounders, though one was fired five hundred times nearly.

By the chairman :

Question. Have you heard of any other rifled gun in use with as large calibre as these largest Parrotts?

Answer. Yes, sir; the recent Armstrong gun of which I spoke has a 13-inch calibre, and throws a 600-pounder projectile.

Question. I speak of those in actual use, not merely experiments.

Answer. I am not aware that any rifled gun has been brought into actual use in the British service larger than the Armstrong 100-pounder breech-loader, of which we have very conflicting statements, but which is maintained, by what seems to be good authority, to be an efficient gun. The Armstrong muzzle-loading 300-pounder rifled gun is now intended for the new iron-clads, such as the Bellerophon, Royal Sovereign, (an old frigate altered to a turret ship,) and I presume the new 600-pounder will also be adopted for sea-coast forts and iron-clads, (it is said the Bellerophon is to have one on each broadside,) if it prove to be a reliable gun. As yet, however, but one of the latter has been made, and very few of the former, and they can hardly be said to be "in actual use."

I know of no rifled gun in the French service larger than their 30-pounders, which constitute the actual armament of some, perhaps all, of their iron-clads now afloat, and which is about equivalent to 32-pounder James guns. Krupp's 9-inch cast-steel rifled guns, made in Prussia, have been extensively ordered by the Russian government for their forts and ships, and, I suppose, may be considered in actual use.

Captain Blakely makes very large guns on the "reinforcing" or hooping principle—quality doubtful. Mr. Lynall Thomas has also made a very large rifled gun, but we have no satisfactory account of it.

The Armstrong 300-pounders carry a somewhat heavier shot than our Parrott 300-pounders.

By Mr. Gooch.

Question. What do you consider the best smooth-bore gun of heavy calibre now known?

Answer. The Rodman gun. That is the only method of making guns of heavy calibre of cast-iron. The method of building up guns of wrought-iron of that calibre has not yet been used.

Question. Which have experience or experiment taught us to be the best material of which to make guns of heavy calibre, cast-iron or wrought-iron?

Answer. Our opinions in this country, I think, are in favor of cast-iron. In England, however, nearly all their modern guns are made of wrought-iron, on the Armstrong building-up principle. The best material, and the best way of making a gun of large calibre, is not decided. We have given the preference to cast-iron, and have obtained results such as no other nation has obtained.

In England they are unable to make a large gun of cast-iron, from inferiority of material or of skill, and their efforts have been to *build up* guns of wrought-iron.

In Prussia, Krupp has made rifled guns of 9-inch calibre (about 200-pounds) of cast-steel, which is probably the strongest of all materials, the steel being cast upon a core and afterwards forged. The Russian government have given him extensive orders, and I recommended the governor of Massachusetts to import a few of them. It is a very expensive material, and the process of forging large masses seems yet to be uncertain. I have since observed that one of them recently burst at St. Petersburg, and it is disputed whether the bursting is the fault of the gun or projectile. Mr. Ericsson is making 13-inch guns for the Dictator entirely of wrought-iron. We have not had sufficient proofs of—or, rather, we have had too many causes to doubt—the durability of built-up guns, and we yet adhere to cast-iron guns, which are, besides, much cheaper. But it is quite likely that the means of manufacturing wrought-iron or steel guns may

be perfected so as to make better guns than cast-iron; or, perhaps, a combination of wrought-iron or steel and cast-iron may be effected. The 11-inch wrought-iron gun, the Prince Alfred, built at the Mersey Iron-works, for the London exhibition, has endured the most satisfactory test.

We know of no heavy guns made in France. The largest rifled guns that we know of are their old cast-iron 30-pounders, rifled and hooped, which I mentioned before. It occurs to me at this moment that I have seen it stated, on what appeared to be good authority, that the Magenta and Solferino (new iron-clads) have 100-pounder breech-loaders, rifled. An 8-inch rifled gun is spoken of as having produced extraordinary results at Vincennes, but their experiments are not made public.

It would appear that Spain has remodelled her marine artillery lately—that the smooth-bore gun is retained as more efficacious for destroying armor plates than rifled guns. Their largest smooth-bore is of eleven inches calibre. I do not know how large rifled guns they have made, though none, probably, anything like as large as this. The largest I have seen mentioned is of 16 centimetres bore, (about $6\frac{1}{4}$ inches, or that of our old 32-pounder.)

It is stated that all their new guns, rifled or smooth-bore, will be of cast-iron, reinforced or hooped at their breech with wrought-iron bands, the same as our Parrott guns.

In conclusion, experience, so far as it has gone, has, I think, taught us that we can obtain guns from cast-iron alone, equal to if not better than any made here or elsewhere from any other material, and at much less cost than of wrought-iron or cast-steel; and that until it is proved that a gun of superior safety, durability, or capable of enduring heavier charges, can be made some other way, we are right in adhering to cast-iron guns made by Rodman's process.

By the chairman :

Question. Do you know anything about a wrought-iron gun called the Ames gun?

Answer. I have heard it spoken of; I am not acquainted with it.

Question. You do not know whether it has been examined or not?

Answer. I do not.

By Mr. Gooch :

Question. Considering the experiments made on both American and English guns of large calibre, which do you think has the greatest endurance, the wrought-iron or the cast-iron gun?

Answer. My impression is that our cast-iron guns are more durable than their wrought-iron guns. But I have not gone thoroughly into that matter; I have not seen all the experiments and their results.

By the chairman :

Question. Have we ever experimented with the English Armstrong or Whitworth gun, so as to compare them with our own?

Answer. We had a battery of light field artillery, Whitworth's, with us on the Peninsula. There was a battery given to us by Americans abroad. Three or four of them are in the forts here. The impression has not been favorable to the gun for general efficiency. It has some very peculiar qualities, such as very great accuracy and range. It carries a very elongated solid projectile, but so small that it does not do any damage beyond just where it hits. Except for special purposes it is not a valuable field gun; it is not available as a field gun for general purposes. At Yorktown I had prepared positions for the two Whitworths we had with us, to use them when we opened the fire of our batteries, to dismount the enemy's guns. For this purpose they would have been very useful on account of their great accuracy. I do not know whether we have ex-

perimented with the Armstrong gun ; I only know this, that Mr. Parrott made an Armstrong gun for the Russian government, about four years ago, I should think, in which he got all the results of range which Armstrong himself did. About that time the method was published, and Mr. Parrott made it from the published accounts of the matter ; but he made no others of that kind.

Question. He thought his own gun a better gun, all things considered ?

Answer. He had not then completed his own gun. The Armstrong breech-loading gun is too delicate in its breech-loading apparatus to be adapted to the rough usage of the field.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 14, 1865.—Ordered to be printed.

Mr. WILSON made the following

REPORT.

[To accompany joint resolution S. No. 111.]

The Committee on Military Affairs and the Militia, to whom were referred sundry petitions praying for the enactment of a law preferring for appointment in all inferior offices "persons honorably discharged from the military or naval service of the United States, who shall have served for the period of three years during the present rebellion, or who shall have suffered permanent disability while in the service, or who shall have been held for one year as prisoners of war, and that the tenure of such office be for life or during good behavior," having considered the same, beg leave to report:

That, in the opinion of the committee, it is the imperative duty of the national and State governments to give the preference for appointments in the various civil offices to persons who have been honorably discharged from the military or naval service of the United States, or who have suffered permanent disability while in the service, provided they possess the qualifications necessary to properly discharge the duties of such offices. The number of civil offices, however, in the various departments of the government, though large at present, bears but a small proportion to the number of persons who have honorably served their country in the field, and who have been disabled by wounds, or disease incurred in the line of duty. The great mass of the men who have served the country in the army and navy must, of necessity, engage again in the varied avocations of civil life. While it is, therefore, the duty of the national government, in its civil appointments, to give the preference to men who have been maimed by wounds, or broken by disease, it is the sacred duty of bankers, merchants, manufacturers, mechanics, farmers, and business men in all the various avocations, to give the preference in all industrial pursuits to soldiers who have been honorably discharged from the service of their country.

The committee, therefore, present the accompanying resolutions, as expressive of the sense of Congress upon the legislation prayed for by the petitioners.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 16, 1865.—Ordered to be printed.

Mr. ANTHONY made the following

REPORT.

[To accompany bill S. No. 442.]

The Committee on Claims, to whom was referred the petition and documents, with the report of the Court of Claims, relative to the claim of Captain John Ericsson, respectfully report:

This claim was first presented to Congress, March 6, 1848, and in 1856 was referred to the Court of Claims. After a careful consideration of all the evidence in the case, both on the part of the claimant and the government, that court reported "a bill for the relief" of the petitioner, paying him "the sum of thirteen thousand nine hundred and thirty dollars, in full, for the balance due him," and in a report accompanying said bill, and dated February 5, 1857, recommend its passage. This report and bill were referred to the Committee on Claims of the Senate, and that committee, on the 26th of January, 1858, reported said bill to the Senate without amendment, with a recommendation that it pass. Since that date this claim has several times received the favorable consideration of this committee and the Senate.

The facts in the case are briefly the following:

By an act of Congress approved March 3, 1839, it was made "the duty of the Secretary of the Navy, under the direction of the President, to make preparations for, and to commence the construction of, three steam vessels of war, on such models as shall be most approved, according to the best advice they can obtain, or to complete the construction of one such vessel of war, upon a model so approved as in the opinion of the President shall be best for the public interest, and most conformable to the demands of the public service." (5 Stat. at Large, ch. 95, sec. 2, p. 364.) Several appropriations were afterwards made by Congress to carry into effect the before-mentioned statute.

In October, 1841, the Secretary of the Navy authorized Captain R. F. Stockton to commence, and to superintend the construction, at the navy yard at Philadelphia, of one of the steam vessels mentioned in the several acts of Congress referred to above.

Soon after, by request of Captain Stockton, an interview took place between him and the petitioner, during which it was arranged that the petitioner should make the drawings for a ship of the dimensions agreed upon, and for the machinery, and also should superintend the making and construction of it and the vessel.

It appears that Captain Ericsson was the inventor and owner of certain patented machinery which it was desired should be used in the vessel to be constructed; but it is admitted and proved that Captain Stockton had no specific authority to employ him either to make drawings for, or to superintend the

construction of, the vessel, nor for the use of his patent machinery; but that Captain Ericsson being desirous of having his plans and patented machinery tested upon a large scale, was willing to trust to the government to reward him, satisfactorily, if they succeeded. In a letter from Captain Stockton to the petitioner, written in July, 1841, he says: "In making up the estimate for the cost of the ship, it will be necessary to consider what must be put down for the use of your patent right." "It will be necessary, therefore, for you to write me a letter, that your charge will hereafter be (if the experiment should prove successful) ———; but, as this is the first trial, on so large a scale, I am at liberty to use the patents, and after the ship is tried, government may pay for their use in that ship whatever sum they may deem proper."

In reply to this letter the petitioner, in a letter to Captain Stockton, 28th of July, 1841, said: "I have duly received your communication on the subject of my patent right for the ship propeller and semi-cylindrical steam-engine, in reply to which I beg to propose that, in case these inventions should be applied to your intended steam frigate, all considerations relating to my charge for patent right be deferred until after the completion and trial of said patent propeller and steam machinery. Should their success be such as to induce the government to continue the use of the patents for the navy, I submit that I am entitled to some remuneration; but considering the liberality that thus enables me to have the utility of the patents tested on a very large scale, and the advantages which cannot fail to be derived in consequence, I beg to state that, whenever the efficiency of the intended machinery of your steam frigate shall have been duly tested, I shall be satisfied with whatever sum you may be pleased to recommend or the government see fit to pay for the patent right."

The ship Princeton was constructed according to these drawings and plans, with the steam machinery of Captain Ericsson, and under his superintendence. She performed the service specified in the calculations; the result was entirely satisfactory to Captain Stockton, and highly advantageous to the United States.

To this success we are indebted to the fidelity, ingenuity, and services of Captain John Ericsson, and for which he has never been paid.

The committee therefore recommend the passage of the accompanying bill as it came from the court of claims.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 17, 1865.—Ordered to be printed.

Mr. MORRILL submitted the following

REPORT.

The Committee on Claims, to whom was referred the petition of Charles Taylor of Victoria county, Texas, for compensation for services rendered and supplies advanced to the United States at Chicago, Illinois, during the Black Hawk war of 1832, report:

That it appears that the petitioner at the above date kept a hotel in Chicago, and run a licensed ferry-boat across the Chicago river. That war having broken out on the frontier with the Indian tribes, the inhabitants of the surrounding country fled to Chicago for safety. Needy and destitute, and failing to find accommodation in the fort at that place, they are represented to have found accommodations, food, and lodgings with the inhabitants of that town, and large numbers with the petitioner, to the number, as he states, of about eight hundred and fifty-five, varying, as to time, from two to twelve days. That before receiving such persons the petitioner applied to the United States Indian agent, Colonel Owen, who advised him to subsist them, and look to the United States government for pay.

That at about that time, as stated by one witness, he, witness, sold to the petitioner beef to the value of \$445, and that petitioner sold a lot of land in Chicago to pay the bill. The petitioner states that he paid out for provisions, aside from the above bill for meat, about \$800, and for forage, bedding, lodgings, &c., thinks himself entitled to at least \$250 more.

That during this war he also lodged and subsisted at his house, at different times, about forty-five militia officers, sick militia-men, and government expressmen, from two to twelve days, for which he claims \$200.

He also states that during this period all the citizens passed over his ferry without payment, including government troops, militia-men, and government employes. The amount claimed for the latter is \$1,520, and a further sum of \$190 for damage done his ferry-boat, used, as he alleges, by the troops for transportation of wood; making in all the sum of \$3,010.

Upon the case stated, it is observable, as a general statement, that there seems to have been no special relation between the petitioner, the United States, and the persons claimed to have been relieved and subsisted, from which an obligation to pay on the part of the government could be inferred. The reference to the Indian agent is not supposed to relieve the case in this respect, as it can hardly be regarded, at best, more than an unauthorized suggestion on the part of that officer.

The claim for subsisting "about eight hundred and fifty-five persons, from two to ten or twelve days," is a statement of the matter so indefinite and unde-

terminated as scarcely to form the basis of computation, while it cannot fail to raise a well-founded doubt as to its validity. The affidavits of the witnesses to this point go no further than to the general fact that large numbers of persons came back upon Chicago, part of whom were at the hotel of the petitioner.

The item of beef rests upon the statement of the witness that "about that time he, witness, sold to Taylor beef to the value of \$445," and that petitioner sold a lot of land in Chicago to pay that bill.

The item for provisions, bedding, lodgings, &c., rests entirely on the general statement of subsisting the persons as above stated, corroborated by the witnesses as to the fact that this hotel was thronged at that time.

From the statement of the petitioner that he lodged and subsisted during the war, at different times, "about fifty-five militia officers, sick militia-men, and government employes," the committee fail to perceive an inference of indebtedness by the United States. As the hotel does not seem to have been recognized as quarters for United States troops, the ready inference is that of individual responsibility of the persons thus entertained.

From the manner in which the ferry was used, the fact that no claim was made for payment upon the government agents sent to Chicago to pay the expenses of the war at that place, and the absence of definite proof of the use of the ferry by the United States troops, tend strongly to strengthen the presumption against the validity of the claim arising from the lapse of time. The assigned loss of vouchers, at so late a date thereafter, the committee think does not relieve this view of the case.

The petitioner seems not to have kept any account of the names or number of persons subsisted, or of the time entertained, and is able now to make only an indefinite statement of the matter.

When the agents of the government were sent to Chicago for payment of its liabilities he does not seem to have made any demand or stated to them the existence of such claim. He continued to live at Chicago for many years thereafter, and finally went into a remote part of the country without preferring any claim against the government, or any department thereof, and apparently with no intention of making such demand, and finally first makes his claim to Congress in 1856, some twenty-six years after he claims the indebtedness originated.

The committee find the evidence in behalf of the claim too uncertain to justify a recommendation of its payment, and therefore ask to be discharged from its further consideration.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 17, 1865.—Ordered to be printed.

Mr. POMEROY made the following

R E P O R T .

[To accompany bill S. No. 450.]

The Committee on Claims, to whom was referred the petition and documents relative to the claim of Samuel L. Gerald, respectfully report :

The petitioner, Sergeant Samuel L. Gerault, company G, 14th New Hampshire volunteers, after being disabled by illness contracted in the line of his duty, was from September 21, 1863, detailed, by order of the Secretary of War, as a clerk to a general court-martial convened at Washington, D. C., but served as a reporter to said court from the time of appointment until December 24, 1864, when the general court-martial was dissolved.

He made application to the Secretary of War, through the judge advocate of the court, for commutation of fuel, quarters, and rations, with a per diem of forty cents, (as allowed to enlisted men detailed as clerks at the department and general headquarters.) The application for commutation was granted, but the "per diem" was not, "for want of authority."

It also appears that enlisted men, when detailed as *reporters* to a general court-martial, are allowed the per diem asked for in this case.

The judge advocate of the court, Garrick Mallery, lieutenant colonel 3d regiment veteran reserve corps, says, "The petitioner by his ability and industry has saved the government the expense of a citizen stenographer for a large portion of the period during which he was clerk." The same facts, and the fact that he was sworn as a reporter to the court, are certified by other members.

Your committee, in accordance with the foregoing facts, report a bill for the relief of the petitioner by paying him the amount of per diem asked for in his petition, to wit, one hundred and seventy-nine dollars and twenty cents, (\$179 20,) and recommend its passage.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 18, 1865.—Ordered to be printed.

Mr. HOWE made the following

REPORT.

[To accompany bill H. R. No. 456.]

The Committee on Claims, to whom was referred an act (H. R. 456) entitled "An act for the relief of the Mercantile Mutual Insurance Company of New York," having carefully examined the same, and the evidence therewith submitted, respectfully report:

That, on the 21st day of November, 1863, the Mercantile Mutual Insurance Company of New York entered into a contract with the firm of J. H. Brower & Co., by which they undertook the assurance of the safe transit of certain United States treasury notes, (known as legal-tender notes,) amounting to the sum of eight thousand dollars, (\$8,000,) from New York to New Orleans in the United States mails on board the steamer Quincy.

In pursuance of said contract eight of said notes, numbered, dated, and described as follows, viz:—One note A, No. 17,097, of 10th March, 1862, for one thousand dollars; one note A, No. 20,421, of 10th March, 1862, for one thousand dollars; one note C, No. 20,251, of 10th March, 1862, for one thousand dollars; one note B, No. 9,962, of 10th March, 1862, for one thousand dollars; one note D, No. 5,820, of 10th March, 1862, for one thousand dollars; one note D, No. 11,900, of 10th March, 1862, for one thousand dollars; one note D, No. 216, of 10th March, 1862, for one thousand dollars; one note D, 7,164, of 10th March, 1862, for one thousand dollars—were, by said firm of J. H. Brower & Co., given to Edward Walter, the president of said insurance company, who caused a record of them to be entered on the application of said firm for insurance. Afterwards, on the 7th day of December, 1863, Mr. Walter, in the presence of Edward M. De Rose, put three of the notes above described, viz: Nos. 17,097, 20,421, and 20,251, into an envelope, addressed to E. J. Hart & Co., at New Orleans, sealed them up, and gave the package to said De Rose, and it was by him, on said 7th day of December, deposited in the post office at New York.

On the 8th day of December, 1863, Mr. Walker, in the presence of Francis Mallaby, jr., put five of the above-described notes, to wit, Nos. 9,962, 5,820, 11,900, 216, and 7,164, into an envelope, addressed to E. J. Hart & Co., at New Orleans, sealed them up, and gave the package to said Mallaby, and it was by him, on said 8th day of December, before two o'clock, p. m., deposited in the post office at New York.

It appears from the deposition of Thomas Clark, of New York city, that he is superintendent of the mails in the New York post office that, on the

8th day of December, 1863, a mail was made up under his direction to be sent to New Orleans by the steamer Quincy; that all letters destined for New Orleans deposited in the post office on the 7th and the 8th days of December, and before two o'clock, p. m., of the latter day, were placed in the mails and despatched by said steamer.

From the depositions of John McCluskey, assistant engineer, and others on board of the steamer Quincy, it appears that that vessel, with all her freight and nearly all of her crew, were destroyed by the foundering of that vessel on the morning of the 13th of December, at half past 4 o'clock, when about abreast of Hatteras light.

It also appears that after the loss of the steamer Quincy had been fully proved, the petitioners, in fulfilment of their contract, paid Messrs. Brower & Co. the full amount of the notes, and took from them an assignment of all their interest in this claim.

The committee therefore report back the bill and recommend its passage.

All of which is respectfully submitted.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 18, 1865.—Ordered to be printed.

Mr. TRUMBULL made the following

R E P O R T .

[To accompany joint resolution S. No. 117.]

The Committee on the Judiciary, to whom were referred the credentials of R. King Cutler and Charles Smith, claiming seats from the State of Louisiana, report :

That in the early part of eighteen hundred and sixty-one the constituted authorities of the State of Louisiana undertook to withdraw that State from the Union, and so far succeeded in the attempt as by force of arms to expel from the State for a time the authority of the United States, and set up a government in hostility thereto.

Since that time the United States, as a necessity to the maintaining of its legitimate authority in Louisiana as one of the States of the Union, has been compelled to take possession thereof by its military forces, and, in the absence of any local organizations or civil magistrates loyal to the Union, temporarily to govern the same by military power.

While a large portion of the State, embracing more than two-thirds of its population, was thus under the control of the military power, steps were taken, with its sanction, and to some extent under its direction, for the reorganization of a State government loyal to the government of the United States. The first action had looking to such reorganization was a registration of the loyal persons within the limits of military control entitled to vote under the constitution and laws of Louisiana at the beginning of the rebellion. The lists thus made up contain the names of between fifteen and eighteen thousand voters, which is represented to be more than half the number of voters in the same parishes previous to the rebellion, and more than two-thirds of the voting population within the same localities at the time the registry was taken. The next step taken in the reorganization of the State government was the election of State officers on the 22d of February, 1864, under the auspices of the military authority acting in conjunction with prominent and influential citizens. At this election 11,414 votes were polled, 808 of which were cast by soldiers and sailors. Citizens of Louisiana, who would not have been entitled to vote under the constitution of Louisiana as it existed prior to the rebellion, for the sole reason that they were in the military service, but who possessed in other respects all the qualifications of voters required by that instrument. The balance, 10,606, were legal voters under the constitution of the State prior to the rebellion. The third step in the reorganization of the State government was to call a convention for the amendment of the constitution of the State. Delegates to this convention were elected March 28, 1864, under the joint and harmonious direction of the military authorities, and the State officers who had been elected on the 22d February previous. In a

paper submitted to the committee by Major General Banks he states that delegates were apportioned to every election district in the State, both within and beyond the lines, so that if beyond the lines of the army the people of the State had chosen to participate in that election, the delegates might have been received if they had shown themselves loyal to the government. They were about 150 in number. All elections subsequent to that for delegates have been ordered and controlled by the representatives of the people.

In the organization of the convention it was provided that a majority of the whole number apportioned to the State, if every district within and beyond the lines had been represented, should constitute a quorum for the transaction of business. Every vote in the convention, from a question of order to the ratification of the constitution, was conducted under this rule, and was approved by a majority of all the delegates apportioned to the State if every district had been represented.

The delegates met in convention, in the city of New Orleans, on the 6th day of April, 1864, remained in session till July 23, 1864, and adopted a constitution, republican in form, and in entire harmony with the constitution of the United States and the great principles of human liberty.

This constitution was submitted, by the convention which adopted it, to the people for ratification, on the first Monday of September, 1864, and adopted by a vote of 6,836 for, to 1,566 against it.

At the same time the vote was taken on the adoption of the constitution, a legislature was elected, representing all those parishes of the State reclaimed from insurgent control, and embracing about two-thirds of its population. This legislature assembled at New Orleans on the 3d day of October, 1864, and proceeded to put in operation a State government by providing for levying and collecting taxes, the establishment of tribunals for the administration of justice, the adoption of a system of education, and such other measures as were necessary to the re-establishment of a State government in harmony with the Constitution and laws of the United States. The State government thus inaugurated has been in successful operation since the period of its establishment, and your committee are assured that if no exterior hostile force is permitted to enter the State, the local State government is fully equal to the maintaining of peace and tranquillity throughout the State, in subordination to the Constitution and laws of the United States.

The manner in which the new State government was inaugurated is not wholly free from objection. The local State authorities having rebelled against the government, and there being no State or local officers in existence loyal to its authority, in taking the initiatory steps for a reorganization, some irregularities were unavoidable, and the number of voters participating in this reorganization is less than would have been desirable. Yet, when we take into consideration the large number of voters who had left the State in consequence of the rebellion, who had fallen in battle, or were absent at the time of the election, both in the Union and rebel armies, and the difficulties attending the obtaining of a full vote from those remaining, in consequence of the unsettled condition of affairs in the State, and the further fact that the adoption of the amended constitution was not seriously opposed, and therefore the question of its ratification not calculated to call out a full vote, the number of votes cast is perhaps as large as could have been expected, and the State government which has been reorganized, as your committee believe, fairly represents a majority of the loyal voters of the State.

Appended hereto is a copy of the various orders and proclamations issued in regard to the election of State officers, delegates to the Constitutional Convention, and members of the legislature, and also a copy of election laws and instructions relative to the duties of commissioners of elections, issued for the guidance of officers in conducting said election.

Messrs. Cutler and Smith, the claimants for seats, were duly elected senators by the legislature which convened on the 3d day of October, 1864, and but for

the fact that, in pursuance of an act of Congress passed on the 13th day of July, 1861, the inhabitants of the State of Louisiana were declared to be in a state of insurrection against the United States, and all commercial intercourse between them and the citizens of other States declared to be unlawful, which condition of things had not ceased at the time of the reorganization of the State government and the election of Messrs. Cutler and Smith, your committee would recommend their immediate admission to seats.

The persons in possession of the local authorities of Louisiana having rebelled against the authority of the United States, and her inhabitants having been declared to be in a state of insurrection in pursuance of a law passed by the two houses of Congress, your committee deem it improper for this body to admit to seats senators from Louisiana, till by some joint action of both houses there shall be some recognition of an existing State government, acting in harmony with the government of the United States, and recognizing its authority.

Your committee therefore recommend for adoption, before taking definite action upon the right of the claimants to seats, the accompanying joint resolution.

PROCLAMATION.

HEADQUARTERS DEPARTMENT OF THE GULF,
New Orleans, January 11, 1864.

To the people of Louisiana :

I. In pursuance of authority vested in me by the President of the United States, and upon consultation with many representative men of different interests, being fully assured that more than a tenth of the population desire the earliest possible restoration of Louisiana to the Union, I invite the loyal citizens of the State qualified to vote in public affairs, as hereinafter prescribed, to assemble in the election precincts designated by law, or at such places as may hereafter be established, on the 22d day of February, 1864, to cast their votes for the election of State officers herein named, viz :

- I. Governor,
- II. Lieutenant Governor,
- III. Secretary of State,
- IV. Treasurer,
- V. Attorney General,
- VI. Superintendent of Public Instruction,
- VII. Auditor of Public Accounts,

who shall, when elected, for the time being, and until others are appointed by competent authority, constitute the civil government of the State, under the constitution and laws of Louisiana, except so much of the said constitution and laws as recognize, regulate, or relate to slavery, which, being inconsistent with the present condition of public affairs, and plainly inapplicable to any class of persons now existing within its limits, must be suspended, and they are therefore, and hereby declared to be, inoperative and void. This proceeding is not intended to ignore the right of property existing prior to the rebellion, nor to preclude the claim for compensation of loyal citizens for losses sustained by pilishments or other authorized acts of the government.

II. The oath of allegiance prescribed by the President's proclamation, with the condition affixed to the elective franchise by the constitution of Louisiana, will constitute the qualification of voters in this election. Officers elected by them will be duly installed in their offices on the 4th day of March, 1864.

III. The registration of voters, effected under the direction of the military governor and the labors of the several Union associations, not inconsistent with the proclamation, or other orders of the President, are confirmed and approved.

IV. In order that the organic law of the State may be made to conform to the will of the people, and harmonize with the spirit of the age, as well as to maintain and preserve the ancient landmarks of civil and religious liberty, an election of delegates to a convention for the revision of the constitution will be held on the first Monday of April, 1864. The basis of representation, the number of delegates, and the details of election will be announced in subsequent orders.

V. Arrangements will be made for the early election of members of Congress for the State.

VI. The fundamental law of the State is martial law. It is competent and just for the government to surrender to the people, at the earliest possible moment, so much of military power

as may be consistent with the success of military operation; to prepare the way, by prompt and wise measures, for the full restoration of the State to the Union and its power to the people; to restore their ancient and unsurpassed prosperity; to enlarge the scope of agricultural and commercial industry, and to extend and confirm the dominion of rational liberty. It is not within human power to accomplish these results without some sacrifice of individual prejudices and interests. In great civil convulsions, the agony of strife enters the souls of the innocent as well as the guilty. Problems of state, too complicate for the human mind, have been solved by the national cannon. The government is subject to the law of necessity, and must consult the condition of things, rather than the preferences of men, and if so be that its purposes are just and its measures wise, it has the right to demand that questions of personal interest and opinion shall be subordinate to the public good. When the national existence is at stake, and the liberties of the people in peril, faction is treason.

The methods herein proposed submit the whole question of government directly to the people—first, by the election of executive officers, faithful to the Union, to be followed by a loyal representation to both houses of Congress, and then by a convention, which will confirm the action of the people, and recognize the principles of freedom in the organic law. This is the wish of the President. The anniversary of Washington's birth is a fit day for the commencement of so grand a work. The immortal Father of his Country was never guided by a more just and benignant spirit than that of his successor in office, the President of the United States. In the hour of our trial let us heed his admonitions.

Louisiana, in the opening of her history, sealed the integrity of the Union by conferring upon its government the valley of the Mississippi. In the war for independence upon the sea, she crowned a glorious struggle against the first maritime power of the world, by a victory unsurpassed in the annals of war. Let her people now herald the coming restoration of the Union, in which the ages that follow us have a deeper interest than our own, by the organization of a free government, and her fame will be immortal.

N. P. BANKS,
Major General Commanding.

QUALIFICATIONS OF VOTERS.

GENERAL ORDERS, }
No. 24. }

HEADQUARTERS DEPARTMENT OF THE GULF,
New Orleans, February 13, 1864.

I. Every free white male, twenty-one years of age, who has been a resident of the State twelve months, and six months in the parish in which he offers to vote, who is a citizen of the United States, and who shall have taken the oath prescribed by the President in his proclamation of the 8th of December, 1863, shall have the right to vote in the election of State officers on the 22d day of February, 1864.

II. Citizens of the State who have been expelled from their homes by the public enemy on account of their devotion to the Union, and who would be qualified voters in the parishes to which they belong, will be allowed to vote for State officers only in the election precinct in which, for the time being, they may reside.

III. Citizens of the State who have volunteered for the defence of the country in the army or navy, and who are otherwise qualified voters, will be allowed to vote in the election precincts in which they may be found on the day of election; and if the exigencies of the public service be such as to prevent their attendance at any established precinct, then commissioners fairly representing the interests involved in the election will be appointed to receive their votes wherever they may be stationed on that day, and to make due returns thereof, as well as of their own votes, to the military governor of the State, as provided for other commissioners of election.

IV. The commissioners of election, at any election precinct, are authorized to administer the oath of allegiance, as prescribed by the President, to any person otherwise qualified to vote, and to register the name of such voter in New Orleans, where a register is required, or to receive it in other parishes, where no register is required, at any time before the polls are closed on the day of election.

V. The commissioners of election in the several parishes will make prompt returns of the votes given to the sheriff of the parish, as provided by law, or, in his absence, to the provost marshal, who will immediately return the same to the military governor of the State.

VI. The sheriffs of the several parishes, and in their absence the provost marshals, will take especial care that the polls are promptly opened, and that suitable judges of election and other officers are appointed. It is desirable that all persons properly qualified shall vote, but it is more important that illegal or fraudulent votes shall not vitiate the election.

VII. The situation of Louisiana is not identical with that of other States designated by the President, but the test of loyalty required by him as a basis for the restoration of government is unequivocal. Full opportunity has been given to the people for the suggestion of any obligation more in accordance, if possible, with the condition of this State, but no

general unity of sentiment appears to exist as to the test of fealty which should be demanded. The inference is irresistible that all parties prefer the form prescribed by the President to any other than their own. The oath prescribed by him offers amnesty and pardon only to those who have committed treason. To all others it is a simple pledge of continued fealty to the government. The oath of allegiance cannot be materially strengthened or impaired by the language in which it is clothed, but it may be accompanied by such explanations as to make known to the public the sense in which it is administered and received. Allegiance cannot be more or less than unreserved, unconditional loyalty.

The repetition of an oath once taken, or when unnecessarily clothed in unusual language, may well cause hesitation; but if it be identified with the restoration of a government at a time when secret evasions and reservations have sapped public integrity and endangered the safety of the nation, it is an unsound patriotism that criticises the form or hesitates at its renewal.

In times of public danger the government has a right to demand an unreserved declaration of the purposes of all its people, and to provide, if necessary, an iron-clad defence against the weapons of its enemies. Those who seek its favor and protection must yield to its just demands. An exemption from all duties and the enjoyment of all privileges at the same time is a greater degree of happiness than is accorded to any man in this life. Let the people of Louisiana look at things as they are, and base their political action upon a declaration of loyalty that cannot be misunderstood or misinterpreted. Upon this depends the restoration of peace and of private and public prosperity.

By command of Major General Banks:

RICHARD B. IRWIN,
Assistant Adjutant General.

ELECTION OF DELEGATES TO CONVENTION.

GENERAL ORDERS, }
No. 35. }

HEADQUARTERS DEPARTMENT OF THE GULF,
New Orleans, March 11, 1864.

I. An election will be held on Monday, the 28th day of March, at 9 o'clock a. m., in each of the election precincts established by law in this State, for the choice of delegates to a convention to be held for the revision and amendment of the constitution of Louisiana.

II. The several parishes shall be entitled to elect the number of delegates herein assigned to each, upon the basis of white population exhibited by the census of 1860, to be chosen in each parish on one ticket by the qualified voters of the parish, except in the parish of Orleans, in which parish the election shall be held in the several representative districts established by law, for the number of delegates herein assigned to each district, to be chosen on one ticket, by the qualified voters of the district, as follows, viz:

Parishes.	White population.	No. of delegates.
Ascension.....	3,940.....	2
Assumption.....	7,189.....	3
Avoyelles.....	5,908.....	2
Baton Rouge, East.....	6,944.....	3
Baton Rouge, West.....	1,859.....	1
Bienville.....	5,900.....	2
Bossier.....	3,348.....	1
Caddo.....	4,733.....	2
Calcasieu.....	4,452.....	2
Caldwell.....	2,888.....	1
Carroll.....	4,124.....	2
Catahoula.....	5,492.....	3
Claiborne.....	8,996.....	4
Concordia.....	1,242.....	1
De Soto.....	4,777.....	2
Feliciana, East.....	4,081.....	2
Feliciana, West.....	2,036.....	1
Franklin.....	2,758.....	1
Iberville.....	3,793.....	2
Jackson.....	5,367.....	2
Jefferson.....	9,965.....	4
Lafayette.....	4,309.....	2
Lafourche.....	7,500.....	3
Livingston.....	3,120.....	1
Madison.....	1,640.....	1

Morehouse	3,784	2
Natchitoches	6,306	3
Orleans	149,068	
First representative district		7
Second do. do.		11
Third do. do.		9
Fourth do. do.		5
Fifth do. do.		5
Sixth do. do.		4
Seventh do. do.		4
Eighth do. do.		3
Ninth do. do.		3
Tenth do. do.		10
Right bank, (Algiers)		2
Ouachita	1,887	1
Plaquemine	2,595	1
Point Coupé	4,094	2
Rapides	9,711	4
Sabine	4,115	2
St. Bernard	1,771	1
St. Charles	938	1
St. Helena	3,413	1
St. James	3,348	1
St. John Baptist	3,037	1
St. Landry	10,703	4
St. Martin's	5,005	2
St. Mary	3,508	1
St. Tammany	3,153	1
Tensas	1,479	1
Terrebonne	5,234	2
Union	6,641	3
Vermilion	3,001	1
Washington	2,996	2
Winn	5,481	2
	357,629	150

III. Any parish not now within the lines of the army shall be entitled to elect delegates as herein specified, at any time before the dissolution of the convention, should such parish be brought within the lines of the army.

IV. Every free white male, twenty-one years of age, who has been a resident of the State twelve months, and six months in the parish in which he offers to vote, who is a citizen of the United States, and who shall have taken the oath prescribed by the President, in his proclamation of the 8th December, 1863, shall have the right to vote in the election of delegates.

V. Citizens of the State, who have been expelled from their homes by the public enemy on account of their devotion to the Union, and who would be qualified voters in the parishes to which they belong, will be allowed to vote for delegates in the election precincts in which, for the time being, they may reside.

VI. Citizens of the State who have volunteered for the defence of the country in the army or navy, and who are otherwise qualified voters, will be allowed to vote in the election precincts in which they may be found on the day of election.

VII. The commissioners of election appointed to superintend the polls at the election of State officers, February 22, 1864, are authorized and directed, in the absence of other orders, to fulfil and discharge all the duties of commissioners of election in their respective precincts, for this election.

VIII. The commissioners of election, at any election precinct, are authorized to administer the oath of allegiance, as proscribed by the President, to any person otherwise qualified to vote, and to register the name of such voter in New Orleans, where a register is required, or to receive it in other parishes where no register is required, at any time before the polls are closed on the day of election.

IX. The commissioners in the several parishes will make prompt returns of the votes given to the sheriff of the parish, as provided by law, or in his absence to the provost marshal, who will immediately return the same to the secretary of state, in the same manner and form as for members of the general assembly.

X. The sheriffs of the several parishes, and in their absence the provost marshals, will take especial care that the polls are properly opened, and that suitable judges of election and other officers are appointed. It is desirable that all persons properly qualified shall vote, but it is more important that the integrity of the election shall not be vitiated by illegal or fraudulent acts.

XI. The delegates duly elected to the convention shall meet at Liberty Hall, Executive Building, in the city of New Orleans, at 12 o'clock m., on Wednesday, the 6th day of April, 1864. In case any vacancy occurs, by resignation or death, after the organization of the convention, a writ of election shall be issued by the convention to fill the vacancy.

By command of Major General Banks:

RICHARD B. IRWIN,
Assistant Adjutant General.

Official:

J. SCHUYLER CROSBY,
Acting Assistant Adjutant General.

GENERAL ORDERS }

HEADQUARTERS, DEPARTMENT OF THE GULF,
Alexandria, La., March 29, 1864.

I. In accordance with the provisions of General Orders No. 35, issued at headquarters, department of the gulf, March 11, 1864, elections will be held the 2d day of April, at 9 o'clock a. m., at Opelousas for the election of three delegates to represent the parish of St. Landry;

At Marksville, for the election of two delegates to represent the parish of Avoyelles;

At Harrisonburg, for the election of four delegates to represent the parish of Catahoula;

At Alexandria, for the election of four delegates to represent the parish of Rapides, in the convention to be held in the city of New Orleans, on the 6th day of April, 1864, for the revision and amendment of the constitution of the State of Louisiana.

II. Every free white male, twenty-one years of age, who has been a resident of the State twelve months, and six months in the parish in which he offers to vote, who is a citizen of the United States, and who shall have taken the oath prescribed by the President in his proclamation of the 8th of December, 1863, shall have the right to vote in the election of delegates.

III. Citizens of the State who have been expelled from their homes by the public enemy, on account of their devotion to the Union, and who would be qualified voters in the parishes to which they belong, will be allowed to vote for delegates in the election precincts in which, for the time being, they may reside.

IV. A. Casabat, N. Taylor, H. T. Burgess and ——— are hereby appointed commissioners of election for the parish of Rapides.

M. B. Wells, R. W. Talafierio, C. A. Hooper, and ——— Hawkins, for the parish of Catahoula.

N. Jenkins, J. J. Beauchamp, and Jonas Wales, for the parish of St. Landry.

T. J. Edwards and W. Masters, for the parish of Avoyelles.

And will make all necessary arrangements for the opening and closing of the polls, and return of the votes given to the secretary of state, as provided in the election of members in the general assembly.

By command of Major General Banks:

GEORGE B. DRAKE,
Assistant Adjutant General.

Official:

J. SCHUYLER CROSBY,
Acting Assistant Adjutant General.

The commissioners of election were citizens of the parishes named. The selection was made, and their appointment was recommended by the citizens representing the several parishes for which they acted. Everything is in accordance with the statutes and constitution of Louisiana, except the publication; which, in the absence of any other authority, was done by military officers. The election was conducted exclusively by citizens, without the interference, protection, or presence of officers or soldiers, unless it were from motives of individual curiosity. A complete registry was kept of all the voters.

Louisiana election.

GENERAL ORDERS, }

No. 118.

HEADQUARTERS, DEPARTMENT OF THE GULF,
New Orleans, August 27, 1864.

Upon the recommendation of the commissioners of election of the State of Louisiana, it is ordered that at the election on the 5th of September next the polls throughout the various parishes be held open for the reception of votes from 6 a. m. to 6 p. m.

By command of Major General Banks:

GEORGE B. DRAKE,
Assistant Adjutant General.

*Louisiana soldiers voting*GENERAL ORDERS, }
No. 120. }HEADQUARTERS, DEPARTMENT OF THE GULF,
New Orleans, August 31, 1864.

Citizens of Louisiana who are legal voters and have enlisted in any of the regiments or detachments of United States troops now serving in the State, will be allowed the privilege of voting in the district in which they may be stationed. A complete roll of them will be kept by the commissioners of election, and forwarded to these headquarters.

Commanding officers throughout the State are hereby ordered to grant furloughs for periods sufficient to enable soldiers who are citizens of the State and legal voters, to proceed to the nearest poll and return, *when not inconsistent with public interest.*

By command of Major General Banks:

GEORGE B. DRAKE,
Assistant Adjutant General.

PROCLAMATION BY MICHAEL HAHN, GOVERNOR OF THE STATE OF LOUISIANA.

To the sheriffs throughout the State:

Whereas, by General Orders No. 35, under date of March 11, 1864, Major General N. P. Banks, commanding the department of the gulf, has ordered that an election "be held on Monday, the 28th day of March next, at 9 o'clock a. m., in each of the election precincts established by law in this State, for the choice of delegates to a convention to be held for the revision and amendment of the constitution of Louisiana," and has directed that the several parishes shall be entitled to elect the number of delegates herein assigned to each upon the basis of the white population exhibited by the census of 1860, to be chosen in each parish on one ticket by the qualified voters of the parish, except in the parish of Orleans; in which parish the election shall be held in the several representative districts established by law for the number of delegates herein assigned to each district, to be chosen on one ticket by the qualified voters of the district, as follows:

Parishes.	No. of delegates.	Parishes.	No. of delegates.
Ascension	2	Rapides	4
Assumption	3	Sabine	2
Avoyelles	2	St. Bernard	1
Baton Rouge, East	3	St. Charles	1
Baton Rouge, West	1	St. Helena	1
Bienville	2	St. James	1
Bossier	1	St. John Baptist	1
Caddo	2	St. Landry	4
Calcasieu	2	St. Martins	2
Caldwell	1	St. Mary	1
Carroll	2	St. Tammany	1
Catahoula	3	Tensas	1
Claiborne	4	Terrebonne	2
Concordia	1	Union	3
De Soto	2	Vermilion	1
Felician, East	2	Washington	1
Felician, West	1	Winn	2
Franklin	1	ORLEANS.	
Iberville	2	First Rep. Dist.	7
Jackson	2	Second do.	11
Jefferson	4	Third do.	9
Lafayette	2	Fourth do.	5
Lafourche	3	Fifth do.	5
Livingston	1	Sixth do.	4
Madison	1	Seventh do.	4
Morehouse	2	Eighth do.	3
Natchitoches	3	Ninth do.	3
Ouachita	1	Tenth do.	10
Plaquemine	1	Right Bank (Algiers) ..	2
Point Coupé	2		
Total			150

Now, therefore, I have thought proper to issue this my proclamation, notifying the qualified electors throughout the State of the election aforesaid, and commanding all sheriffs, commissioners of election, and other officers therein concerned, to hold said election for delegates in

their respective parishes, and in the parish of Orleans, in the representative districts as aforesaid, and to give the proper public notice thereof; and I enjoin upon them care that said election be held and conducted at the places and in the manner designated by law and the general orders aforesaid, and that the returns be promptly made to the secretary of state at New Orleans. For all of which this proclamation, without further notice, will serve as authority.

Given under my hand and seal of the State, at the Executive Building, city of New Orleans, this 16th day of March, A. D. 1864, and of the independence of the United States of America the eighty-eighth.

MICHAEL HAHN.

By the governor:
S. WROTNOWSKI, *Secretary of State.*

[Official.]

Proclamation by J. Madison Wells, lieutenant and acting governor of the State of Louisiana.

EXECUTIVE OFFICE, NEW ORLEANS, July 27, 1864.

Whereas the convention lately assembled at the city of New Orleans for the purpose of revising and amending the constitution of the State of Louisiana has ordained "that immediately after the adjournment of the convention the governor shall issue his proclamation directing the several officers of this State authorized by law to hold elections, or, in default thereof, such officers as he shall designate, to open and hold polls in the several parishes of the State, at the places designated by law, on the first Monday of September, 1864, for the purpose of taking the sense of the good people of this State in regard to the adoption or rejection of this constitution; and it shall be the duty of said officers to receive the suffrages of all qualified voters. Each voter shall express his opinion by depositing in the ballot-box a ticket whereon shall be written 'The constitution accepted' or 'The constitution rejected.' At the conclusion of the said election, the officers and commissioners appointed to preside over the same shall carefully examine and count each ballot as deposited, and shall forthwith make due return thereof to the secretary of state, in conformity to the provisions of law and usages in regard to elections:"

Now, therefore, I have thought proper to issue this my proclamation, notifying the qualified voters of the State of the ordinance of the convention as aforesaid, and further commanding all sheriffs, commissioners of elections, and all officers therein concerned, to notify the people to assemble and vote upon the acceptance or rejection of the constitution upon the aforesaid first Monday of September next, and that the proceedings be conducted and returns thereof be made as ordained in said constitution.

Given under my hand and seal of the State, at the city of New Orleans, the 27th day of July, A. D. 1864, and the independence of the United States the eighty-ninth.

J. MADISON WELLS.

By the governor:
S. WROTNOWSKI, *Secretary of State.*

Proclamation by J. Madison Wells, lieutenant and acting governor of the State of Louisiana.

EXECUTIVE OFFICE, NEW ORLEANS, July 30, 1864.

Whereas the convention lately assembled in the city of New Orleans for the purpose of revising and amending the constitution of the State of Louisiana has adopted an ordinance "to provide for an election to fill vacancies in the representation of the State of Louisiana in the thirty-eighth Congress," containing the following provisions:

"SEC. 1. *Be it ordained by the people of the State of Louisiana, in convention assembled,* That an election shall be held by the qualified electors of the State of Louisiana on the first Monday of September, 1864, for representatives in the Congress of the United States of America, to fill the vacancies now existing in the thirty-eighth Congress, and to serve until the end of the term of said Congress.

"SEC. 2. *Be it further ordained,* That, until otherwise directed by law, the State shall be divided into five congressional districts, as follows, and the qualified electors of each district shall choose one representative:

"The first congressional district shall comprise the parishes of St. Bernard and Plaquemine, the right bank of the parish of Orleans, the ninth, eighth, seventh, sixth, and fifth representative districts of the parish of Orleans, and that portion of the fourth representative district of the parish of Orleans which is bounded by St. Louis, Rampart, and Canal streets, and the rear line of said representative district.

"The second congressional district shall comprise that portion of the fourth representative district of the parish of Orleans which is bounded by St. Louis, Rampart, and Canal streets and the Mississippi river, the third, second, and first representative districts of the parish of Orleans, and that portion of the tenth representative district of the parish of Orleans which is known and designated by existing statutes as the tenth ward of the city of New Orleans.

"The third congressional district shall comprise that part of the tenth representative district of the parish of Orleans which is known and designated as the eleventh ward of the city of New Orleans, and the parishes of Jefferson, Washington, St. Tammany, St. Helena, Livingston, St. Charles, St. John the Baptist, St. James, Ascension, East Baton Rouge, East Feliciana, West Feliciana, Terrebonne, and Lafourche.

"The fourth congressional district shall comprise the parishes of Natchitoches, Sabine, Rapides, Calcasieu, St. Landry, Vermilion, Avoyelles, Point Coupé, Lafayette, St. Martins, West Baton Rouge, Iberville, Assumption, and St. Mary.

"The fifth congressional district shall comprise the parishes of Bossier, Claiborne, Union, Morehouse, Carroll, Bienville, Jackson, Ouachita, Caldwell, Franklin, Madison, Tensas, Concordia, Catahoula, Winn, Caddo, and De Soto."

And whereas it is provided in the constitution adopted by said convention that there shall be a session of the general assembly held in the city of New Orleans, beginning on the first Monday of October, 1864, and it shall be the duty of the governor to cause a special election to be held for members of the general assembly in all the parishes where the same may be held on the day of election for ratification or rejection of this constitution:

And whereas it is further provided in said constitution that at said election the representation in the senate and house of representatives shall be as follows:

For the parish of Orleans, forty-four representatives, to be elected as follows:

First representative district.....	3
Second do. do	5
Third do. do	7
Fourth do. do	3
Fifth do. do	4
Sixth do. do	2
Seventh do. do	3
Eighth do. do	3
Ninth do. do	4
Tenth do. do	4
Orleans (right bank) do	2
For the parish of Livingston	1
Do. St. Tammany	1
Do. Point Coupé	1
Do. St. Martins	2
Do. Concordia	1
Do. Madison	1
Do. Franklin	1
Do. St. Mary	1
Do. Jefferson	3
Do. Plaquemine	1
Do. St. Bernard	1
Do. St. Charles	1
Do. St. John the Baptist	1
Do. St. James	1
Do. Ascension	1
Do. Assumption	3
Do. Lafourche	3
Do. Terrebonne	2
Do. Iberville	1
Do. West Baton Rouge	1
Do. East Baton Rouge	2
Do. West Feliciana	1
Do. East Feliciana	1
Do. St. Helena	1
Do. Washington	1
Do. Vermilion	1
Do. Lafayette	2
Do. St. Landry	4
Do. Calcasieu	2
Do. Avoyelles	2
Do. Rapides	3
Do. Natchitoches	2
Do. Sabine	1
Do. Caddo	2

Soto.....	2
hita.....	1
.....	2
.....	1
.....	2
.....	1
.....	2
.....	3
.....	1
.....	2
.....	1
.....	1
.....	2
.....	118

divided into the following senatorial districts :

- The parish of Orleans lying on the left bank of the Mississippi river into two senatorial districts. The first and fourth districts of the city of New Orleans compose one district, and shall elect five senators ; and the second and third said city shall compose the other district, and shall elect four senators.
 - The parishes of Plaquemine, St. Bernard, and all that part of the parish of Orleans on the bank of the Mississippi river, shall form one district, and shall elect one senator.
 - The parish of Jefferson shall form one district, and shall elect one senator.
 - The parishes of St. Charles and Lafourche shall form one district, and shall elect one senator.
 - The parishes of St. John the Baptist and St. James shall form one district, and shall elect one senator.
 - The parishes of Ascension, Assumption, and Terrebonne shall form one district, and shall elect two senators.
 - The parish of Iberville shall form one district, and shall elect one senator.
 - The parish of East Baton Rouge shall form one district, and shall elect one senator.
 - district, and shall elect two senators.
 - The parish of West Baton Rouge, Point Coupé, and West Feliciana shall form one district, and shall elect one senator.
 - The parishes of Washington, St. Tammany, St. Helena, and Livingston shall form one district, and shall elect one senator.
 - The parishes of Concordia and Tensas shall form one district, and shall elect one senator.
 - The parishes of Madison and Carroll shall form one district, and shall elect one senator.
 - The parishes of Morehouse, Ouachita, Union, and Jackson shall form one district, and shall elect two senators.
 - The parishes of Catahoula, Caldwell, and Franklin shall form one district, and shall elect one senator.
 - The parishes of Bossier, Bienville, Claiborne, and Winn shall form one district, and shall elect two senators.
 - The parishes of Natchitoches, Sabine, De Soto, and Caddo shall form one district, and shall elect two senators.
 - The parishes of St. Landry, Lafayette, and Calcasieu shall form one district, and shall elect two senators.
 - The parishes of St. Martin and Vermilion shall form one district, and shall elect one senator.
 - The parish of St. Mary shall form one district, and shall elect one senator.
 - The parishes of Rapides and Avoyelles shall form one district, and shall elect two senators.
- Now, therefore, I have thought proper to issue this my proclamation, notifying the qualified voters throughout the State of the elections aforesaid, and I hereby command all sheriffs, commissioners of elections, and other officers therein concerned, to hold said elections for representatives to Congress and senators and representatives to the general assembly, on the first Monday of September next, and that the proceedings be conducted and returns thereof be made according to the provisions of law and usages in this State in holding elections.
- Given under my hand and the seal of the State, at the city of New Orleans, this 30th day of July, A. D. 1864, and of the independence of the United States the eighty-ninth.

J. MADISON WELLS.

By the governor :

S. WROTONOWSKI, *Secretary of State.*

Election laws and instructions relative to the duties of commissioners of elections, sheriffs, and returning officers.

By direction of his excellency, Lieutenant and Acting Governor Wells, the following compendium of election laws and instructions has been prepared, and is forwarded for the information and guidance of sheriffs, deputy sheriffs, coroners, and commissioners of elections. They are compiled almost exclusively from the statutory enactments, which are extracted from *verbatim*, wherever applicable. These instructions and extracts from the laws are necessarily limited to such as apply directly to the duties of commissioners of election, sheriffs, or other officers making returns or having other duties to perform in connexion with the holding of elections.

It will also be perceived that the instructions and laws, as herein compiled, are chiefly applicable to the country parishes. In the city of New Orleans, the operation of the laws creating the central board of commissioners and the registry of voters renders them in great part unnecessary, and on some subjects entirely inapplicable, being otherwise provided for by special law for the parish of Orleans. The want of such a uniform and well-established system in the other parishes has necessitated the issue of this abstract for the special use of officers in those parishes, to enable them to secure regularity and be fully informed of their duties under the law.

WHERE HELD.

The election shall be held in each parish at the several election precincts established by law. Police juries have power to establish as many election precincts as they may deem necessary. A precinct once established shall not be abolished, nor its location changed, except by a vote of two-thirds of all the members elected to the police jury.

Sheriffs should locate the poll at such place, within the boundaries of each precinct, as will be most convenient to the greater number of voters, specifying the place distinctly in his notice.

HOURS.

The polls shall be kept open at each precinct (except in the parish of Orleans) from 9 a. m. until 4 p. m.

In the parish of Orleans the polls are kept open from 8 a. m. to 4 p. m., according to an act "relative to elections in the parish of Orleans."—(Acts of 1857, No. 289.)

COMMISSIONERS.

Elections at each precinct shall be presided over by three commissioners, any two of whom shall form a quorum.

It shall be the duty of the sheriffs of the country parishes to make the appointment of the commissioners for the coming election as soon as possible after receiving these instructions; and they are directed to repair immediately to all parts of their respective parishes for the purpose of selecting them, administering the oath to them, and taking preliminary measures for the opening of the polls at every precinct.

The sheriff shall notify the commissioners of their appointment at the expense of the parish. The commissioners shall, before entering upon the discharge of their duties, take the following oath:

I, ———, do solemnly swear that I am qualified, according to the constitution of this State, to hold the office to which I have been appointed, and I will faithfully and impartially discharge and perform all the duties incumbent on me as commissioner of election, according to the best of my abilities and understanding; and further, I do solemnly swear, in the presence of Almighty God, that I will henceforth faithfully support, protect, and defend the Constitution of the United States, and the Union of States thereunder, and that I will in like manner abide by and faithfully support all acts of Congress passed during the existing rebellion with reference to slaves, so long and so far as not repealed, modified or held void by Congress, or by decree of the Supreme Court, and that I will in like manner abide by and faithfully support all proclamations of the President, made during the existing rebellion, having reference to slaves, so long and so far as not modified or declared void by the Supreme Court.

The oath to be administered by the sheriff or his deputy or by any justice of the peace, or, if neither the sheriff nor his deputy nor any justice of the peace be present, the commissioners may administer the oath to each other.

To secure promptness and punctuality, sheriffs are recommended to cause all commissioners to be sworn before the day of election.

In case no commissioners shall have been appointed and notified of their appointment prior to the hour of 9 o'clock a. m. on the day of the election, or if none of those who have been appointed and notified be present within two hours after the time for the opening of the

polls, the voters present shall hold a meeting and elect by ballot three commissioners to pre-side at the election. Should only one of the commissioners be present, *he* shall appoint another, and both together shall appoint a third, and the commissioners so appointed shall take the oath and perform all the duties of commissioners of election.

No election shall be vitiated by a failure to open the polls at the time fixed by law, unless it shall be proven that a sufficient number of electors were deprived of their votes to have changed the result of the election.

The commissioners of election shall preserve order and decorum at the election, and shall have power to commit to prison any disorderly person, for a time not to extend beyond the hour for closing the polls, provided he shall be permitted to vote before being imprisoned.

It shall be the duty of the commissioners to receive the ballots of all legal voters who shall offer to vote, deposit the same in the ballot-box to be provided for that purpose, and to keep duplicate lists thereof.

Immediately after closing the polls they shall open the box and count the votes polled for each candidate, making mention of the name of the candidate and the office voted for. They shall then deliver one of the lists and one of the returns to the deputy sheriff or other officer in attendance, whose duty it shall be to carry the same without delay to the returning officer of the parish; but if no deputy sheriff or other officer be in attendance, such returns shall be conveyed to the returning officer by one of the commissioners of election for that precinct, to be selected by those who have presided at the election time and place appointed, the absentees duty may be filled by any justice of the peace; any justice of the peace may take the place of any mayor or recorder interested in the returns.

QUALIFICATIONS OF ELECTORS.

The following ordinance is now the law of the State and must be enforced by commissioners at the election of the 5th of September:

AN ORDINANCE DEFINING THE QUALIFICATIONS OF VOTERS.

SECTION 1. *Be it ordained by the people of the State of Louisiana in convention assembled.* That, until otherwise provided by law, all commissioners or other officers or persons presiding over elections held in this State, shall require that each voter shall possess the qualifications defined in the constitution as adopted and submitted by this convention, and shall have declared his allegiance to the United States government according to the provisions of the President's proclamation of December the 8th, 1863.

SEC. 2. *Be it further ordained,* That the executive officers of the State be charged with the execution of this ordinance, and the providing of such details and instructions as may be necessary to carry the same into effect.

SEC. 3. *Be it further ordained.* That this ordinance shall have the force and effect of law from and after its passage until hereafter repealed or modified by the legislature of this State.

Adopted in convention, at the city of New Orleans, the twenty-fifth day of July, one thousand eight hundred and sixty-four.

J. E. NEELIS, *Secretary.*

E. H. DURELL, *President.*

Commissioners will accordingly require that each voter shall be a white male who has attained the age of twenty-one years, and who has been a resident of the State twelve months next preceding the election, and the last three months thereof in the parish in which he offers to vote, and who shall be a citizen of the United States, shall have the right of voting. But no voter, on removing from one parish to another within the State, shall lose the right of voting in the former until he shall have acquired it in the latter; and they shall also require that the voter shall have taken the oath of allegiance according to the provisions of the proclamation of December 8, 1863, adopted by the constitutional convention. It is in the following words:

"I do solemnly swear, in the presence of Almighty God, that I will henceforth faithfully support, protect, and defend the Constitution of the United States and the Union of States thereunder, and I will in like manner abide by and faithfully support all acts of Congress passed during the existing rebellion with reference to slaves so long and so far as not repealed, modified, or held void by Congress or by decree of the Supreme Court; and that I will in like manner abide by and faithfully support all proclamations of the President made during the existing rebellion having reference to slaves, so long and so far as not modified or declared void by the Supreme Court."

If the person offering to vote shall not produce before the commissioners his certificate of having taken the above oath, and it shall be in their cognizance that he has taken it, they shall administer the said oath to the voter. Printed forms of the oath shall be supplied to each poll, and the voter taking the oath at the polls shall, after the same is administered, subscribe one of the printed forms; but if, by any negligence, the forms shall not have reached or been supplied to said poll, they shall require the voter to sign a written copy.

When a person offering to vote shall be challenged, or the commissioners shall be in doubt as to his qualifications, they shall administer to him the following oath or affirmation, to wit:

"I (A. B.) do solemnly swear or affirm, that I am a citizen of the United States, (if a naturalized citizen, he shall state on his oath the place where he was naturalized,) and that I have attained the age of twenty-one years, and that I have resided in the State one year next preceding this election, and the last three months thereof in this parish."

Should any person, offering to vote, refuse to take the oaths prescribed, or affirm to the same, the vote of such person shall not be received; and it shall be the duty of the commissioners to receive the votes of all persons taking the same.

It shall be the duty of the commissioners to have a copy of the oaths, required to be administered, at the head of a list which all persons allowed to vote on oath shall be compelled to sign before the vote is placed in the box, and it shall be the duty of the magistrate presiding at each box to have the copy and list filed in the office of the clerk of the district court of the parish in which the poll is held.

By section 17 of the act of 1855, see page 410, it will be seen that in cases where the oath or affirmation shall be administered by the commissioners of election, any person swearing or affirming falsely in the premises shall be subject to the penalties provided by law for perjury.

Any voter shall have the right to require that any person attempting to vote shall be put on his oath and made to declare whether he has not voted in another precinct, and in case such person should make a false oath he shall be subject to the penalties provided by law for perjury.

It shall be lawful for any person to vote at any precinct within the parish of his residence: but in cities and towns, which are or may be divided into election precincts, every voter in such town or city shall vote at the precinct wherein he resides.

All persons convicted of the crimes of bribery, perjury, forgery, and other high crimes and misdemeanors, punishable by imprisonment with hard labor in the penitentiary, shall be excluded from the right of suffrage. And all persons convicted of any of said offences in any other country, and who shall have removed here, shall not have the right to vote.

In the city of New Orleans a voter shall be deemed to reside where he has lodged or slept for the last three months, and shall not lose his residence in one district until he shall have acquired it in another.

OF BOXES AND TICKETS.

Sheriffs shall supply each poll with two suitable ballot-boxes at the expense of the parish, one for the votes upon the ratification of the constitution, and the other for votes for Congress and members of the legislature.

The votes upon the constitution shall be by a separate ticket—for "the constitution accepted" or "the constitution rejected."

For the other box, the names of the persons voted for by each voter shall be written or printed on one ticket, on which the names of the persons voted for, together with the offices for which they are voted for, shall be accurately specified; and should two or more tickets be folded together the tickets so folded shall be rejected. Voters for Congress should be included on the same ticket with members of the State legislature; they cannot be voted for on separate ticket, as each voter can cast but one ticket in the same box.

SHERIFFS AND RETURNING OFFICERS.

It shall be the duty of the sheriff of each parish to have at each election precinct a deputy sheriff or other person authorized by him, whose duty it shall be to attend at the election and obey the orders of the commissioners, and faithfully to convey the returns to the sheriff or returning officer within forty-eight hours after the close of the polls; and for his wilful neglect or failure to perform all or any of the duties incumbent on him he shall be fined in a sum not exceeding five hundred dollars, at the discretion of the court.

Should any deputy sheriff, or other person authorized by the sheriff, fail to attend, the commissioners of election shall appoint a suitable person to act in his place at the precinct.

It shall be the duty of the sheriff, or other returning officer of the parish, except the parish of Orleans, on the second day after the closing of the polls, to repair to the courthouse of the parish, and there, in presence of at least two witnesses, and as many other persons as may attend, to compile the returns sent in by the commissioners at the several precincts, to make public proclamation of the result, and to make due returns thereof to the secretary of state; and for his wilful failure or neglect herein, such returning officer shall be fined in a sum not exceeding five hundred dollars, at the discretion of the court.

It shall be the duty of the returning officer of each parish to make out duplicate returns, to forward one of them immediately by mail to the secretary of state, to forward another to the secretary of state by the next speedy mode of conveyance, and to deposit the third in the office of the clerk of the first district court.

The sheriff of the parish shall be the returning officer of the election, unless such sheriff be himself a candidate, in which case the coroner of the parish for the time being shall be the returning officer with respect to the office for which the sheriff may be a candidate. Should the office of sheriff or coroner be vacant, or either of them be disqualified from acting from any cause, then the recorder, or, in the event of his being unable to act, the clerk of the court shall be the returning officer.

Sheriffs should immediately post notices of the election up at each precinct—if there be a newspaper published in the parish, by publishing the notice in such paper. In parishes where the law heretofore required such notices to be in both English and French, this custom should be still complied with.

All necessary expenses, incurred by the sheriff and officers for holding elections, shall be paid by the parish or city in which they may be incurred.

EXPENSES OF THE ELECTION.

The foregoing extracts show that election expenses are chargeable to the parish. But most of the parishes either have no police jury, or the police juries are of such recent appointment that no parish taxes have been levied or collected, and consequently there are no funds in the parish treasuries to defray the expenses of sheriffs and other officers engaged in holding elections. It is understood, therefore, that, in the instance of the present election, all such proper and legal expenses, as should be paid by a police jury, shall, after being duly certified and audited, be paid out of the State treasury, and charged to the parish.

DISTRIBUTION OF COPIES.

Sheriffs are requested at once to furnish all the commissioners they may appoint with copies of these laws and instructions, and also to leave copies with citizens in the vicinity of each poll, in order that the means of correct information may be within the reach of all.

By authority of Lieutenant and acting Governor Wells.

N. C. SNETHEN, *Secretary*.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 20, 1865.—Ordered to be printed.

Mr. BUCKALEW submitted the following

REPORT.

The Joint Select Committee of the two houses of Congress appointed at the last session to examine into the present condition of the Senate chamber and hall of the House of Representatives, as regards lighting, heating, and ventilation, and their acoustic properties, and the defects and disadvantages existing in the same, make the following report :

That pursuant to the resolution of appointment they have obtained from Charles F. Anderson, architect, a statement of the principles upon which he proposes the improvement of the halls of Congress, as regards the particulars above mentioned, and also estimates of the expense that will attend the proposed alterations, and they append the said statement and estimates to this report. They have also obtained plans and drawings of the proposed changes of the halls and Capitol wings, as authorized by a clause of the miscellaneous appropriation act of 2d July, 1864, which are deposited with the Secretary of the Senate for examination by the members of both houses. The committee have also taken the voluntary testimony of a number of witnesses upon the several subjects covered by the present inquiry, to enable them to come to intelligent conclusions, and they now beg leave to submit that testimony in connexion with this report for the information of Congress.

The committee propose, in the first place, to examine the several defects alleged to exist in the present arrangements relating to the halls of Congress, and particularly those relating to their ventilation ; next to state distinctly the character of the changes proposed ; and, lastly, the time, manner, and cost of their accomplishment.

First, then, as to existing defects :

PLACE OF OBTAINING AIR.

1. The air for ventilating the halls is now taken from the levels of the terraces, between the wings and the old Capitol building, on the western side. To these situations much dust and other impurities are carried by the action of winds, subjected to the influence of eddies, and taken with the air through the ventilating passages into the halls. And in warm weather the terraces and adjoining walls, becoming heated, affect very considerably the temperature of the air obtained. Reference upon this point of the inquiry is made to the testimony of Dr. Antisell, and Mr. Forney, the engineer in charge of the ventilation of the House of Representatives. It is manifest that the air introduced into the halls should be obtained from places not subject to the accumulation of impurities, or to the undue production of heat.

OVERHEATING THE AIR.

2. By the examination of the engineer in charge of the heating and ventilating department of the Senate chamber, it appears that the air on its passage to the chamber is heated exclusively by steam, introduced into mazes of pipes for the purpose. Hot water is not used, and it seems certain that the air is overheated and thereby subjected to injurious changes. Professor Wyman says: "In all cases in which it may be necessary to warm the fresh air required to be supplied to an inhabited room or cell, it is essential to health that the increased temperature should be derived from a moderately heated surface; hence the advantage of using water as a medium of heating. In a hot-water apparatus of ordinary construction, the temperature of the surfaces when exposed to a current of air will never reach the boiling point, and it is obvious that they may be regulated in any lower degree that is likely to be useful."

Among the conditions prescribed for the warming apparatus of Pentonville prison—the "model prison"—was the following: "That the entire radiating surface should derive its temperature from the circulation of hot water, and that it should be of such an area as would maintain a temperature of 60° in the cells when the external atmosphere was at 32°; further, that under ordinary circumstances the temperature of the heating surface should not range above 109° to 120° of Fahrenheit."

This point of over-heating the air demands amendment which must be secured in any new arrangement regarding ventilation.

DEFICIENT MOISTURE.

3. But one of the most manifest and material defects in the ventilation of the Capitol wings, is, the exceeding aridity of the air supplied. To this point the committee have given particular attention, and the information obtained upon it is most conclusive in condemnation of the existing arrangement. Both health and comfort are disregarded in forcing into the halls air containing but one-third, to one-half, the moisture or vapor of water required at the temperature to which it is raised. It is to be taken for granted that the natural constitution of air at any given temperature is better adapted to life and human comfort than an artificial one can be, and it is to be secured as nearly as possible in all structures designed for human occupancy. In a free atmosphere the demand for moisture caused by increased temperature is fully supplied from natural sources. But in moving air through a confined space destitute of watery vapor, and subjecting it on its passage to the action of heat, while its character must undergo a change as to temperature and density, there will be no corresponding change in the amount or proportion of moisture it contains. In other words, moisture must be imparted to it by artificial means if its true natural constitution is to be maintained. That a principle so well known and so indisputable should have been ignored in the ventilation of the Capitol is most surprising, and indicates, if it does not prove, incompetency or indifference to duty in the superintendency of the building.

Doctor Reid observes, that "the moisture in the air is not to be regarded as an adventitious ingredient, but rather as an essential component of atmospheric air. It requires in general to be added to air in cold climates in winter in proportion to the temperature communicated to it before it approaches the person. If cold air be heated in spring and summer by natural causes, it absorbs a proportional share of moisture in general from the surface of moist ground, lakes, and rivers, or from the ocean, and thus reaches the system in a congenial condition. On the other hand, if cold and dry air be heated artificially without receiving moisture, its increased power of absorbing moisture renders it offensive to the system."—*Reid on Ventilation*, sec. 341, 43.

"The amount of evaporation into equal spaces is dependant upon the temperature, and increases considerably on a small increase of heat." Between 32° and 100° the amount of evaporation is doubled by the addition of about 20° , or at 52° it is double that of 32° . * * * In winter, the air, when extremely cold, is proportionably free from moisture. The true time, accordingly, when moisture ought to be applied to air is not when it is warm in spring and summer, but as it is warmed artificially in winter. The temperature and moisture of the air are certainly the most important circumstances that demand attention after securing air of sufficient purity. (*Ib.*, s. 350, 436, 511.)

Professor Wyman says that "air holds in solution a variable amount of aqueous vapor, limited by the temperature. The influence of this agent upon the human system is exceedingly important. The lungs are continually exhaling moisture, its quantity depending upon the hygrometric state of the atmosphere. If the air be too dry, the lining membrane of the lungs, throat, and mouth, may be deprived of necessary moisture so rapidly that an uncomfortable degree of dryness, or even inflammation, may be induced. Undoubtedly, the best constitution of the air is that which nature affords. During the summer months the air has gradually increased in temperature, and appropriated from rivers and other sources that amount of vapor which is required. In our houses we should imitate the same course, and, heating air from below 32° to 70° , provide a sufficient supply of water." (*Wyman on Ventilation*, pp. 190, 91, 96.)

"Air changed in temperature by warming without increased moisture is apt to produce unpleasant feelings and painful sensations in the chest, which are often attributed to too great heat. In very dry air the insensible perspiration will be increased, &c. The objection lies against *heated* air, no matter how heated. Stoves and air furnaces with their red-hot surfaces are undoubtedly worse for the air than hot water apparatus which never scorch it, yet the latter may pour into our apartments a withering blast of air at 150° , which may be potent for mischief. The only way that hot air can be made healthful and desirable is by an effectual plan of artificial evaporation." (*Dr. Youmans' Handbook of Social Science*, 308.)

Appended to this report, is a paper furnished the committee by Dr. John A. Rowland, showing the capacity of air for moisture at different temperatures, both as to volume and weight, to which reference is made for further information upon the present point. The figures are obtained from works of reputation, and they show that the air of the halls during the winter and spring requires two or three times the amount of moisture actually contained in it; for its aridity, caused by heating it, is modified in no way whatever, not even by leakage of doors and windows, as in the case of an ordinary apartment.

But what determines the condition of the air in this respect with perfect certainty is the examination given it by Dr. Wetherill of the Smithsonian Institution. He examined the air of the Senate chamber on the 24th of January, and on February 9th, and states the results in his testimony. Indicating the saturation point of air at any given temperature by the number 100, we have a standard established for comparison, when ascertaining the quantity of moisture actually present in any specimen of air. Upon ascertaining the amount so present, it may be indicated by a number which will bear the same relation to 100 that the amount found present bears to the amount which would be present if the air were completely saturated or contained moisture to the full extent of its capacity. And in such case, the number indicating the quantity present is called the "relative humidity" of the air examined.

Now the mean annual relative humidity of atmospheric air in England has been ascertained to be about 75° , saturation being, as before stated, 100° . Mr. Roscoe states that in the house of lords the air is pleasant to breathe when its relative humidity ranges between 55° and 82° . But Dr. Wetherill found the relative humidity of the air in our Senate chamber on January 24th to be as fol-

lows: In ladies' gallery, near reporters' gallery, at 2½ p. m., 27. In same, near diplomatic gallery, 27. On same day, at 3 p. m., the relative humidity of the external air entering the ventilating fan, was 56.

On February 9th, with a relative humidity of external air at 55 at 2½ p. m., he obtained the following results in the Senate chamber: in southeast corner of chamber on a level with desks, at 3½ p. m., relative humidity, 20; in diplomatic gallery, at 4 o'clock, 21.

These astonishing but indisputable results prove that upon that occasion less than one-third the proper amount of moisture was present in the air of the chamber.

An observation taken by him at 4.30 p. m. of the same day in the air-space above the ceiling is also instructive. He found the temperature to be 64°, while the temperature in the hall below at the previous observation had been 70.9° upon the floor, and 68° in the diplomatic gallery. An enormous influence of the roof in producing cold, and affecting the air of the halls, is shown by these figures. It was a cold day, with an external temperature of 30.6°.

It may be added, that by observations taken at the Smithsonian Institution for the months of February and June, 1859, there being three observations daily, the mean relative humidity of the atmosphere for the former month was 71, and for the latter month, 69. Therefore, on the 9th of February, 1865, the air used in ventilating the Senate chamber, with an external February temperature, and an inside temperature of June, had a point of relative humidity in the chamber that required to be multiplied by 3½ to raise it to the proper Washington average.

With good reason, therefore, does Dr. Antisell declare in his testimony that one of the capital defects of our ventilation is the want of hydration of the air of the halls.

Some attempt has been made to hydrate the air recently, but in a very insufficient manner, and without material effect. The laudable effort of the present sergeant-at-arms of the Senate, with insufficient space and facilities at command, to hydrate the air of the Senate chamber, deserves commendation.

But to accomplish the object in view a radical change in existing general arrangements is required. Dr. Reid states that, in ventilating the English House of Commons when it was crowded, he often exposed the air furnished to 5,000 feet of evaporating surface to impart the necessary moisture, *and subsequently made the air flow through jets of water.* (*Youmans, s. 347.*)

The ideas that have obtained in the ventilation of the capitol may be estimated by the statement made to the committee by the present architect, that he proposed to hydrate the air of each hall by passing it over an evaporating surface of forty square feet. The committee are not prepared to recommend this particular experiment. (A subsequent statement was, thirty feet of heated water, or a surface a little exceeding four feet by seven.)

"When dry air is exposed to a source of moisture, a considerable *time* must elapse before it will become saturated. The diffusion of vapor into hot air is much more rapid than into that which is colder, but it is not at all instantaneous. Mr. Daniell observed that a few cubic inches of dry air continued to expand by the absorption of humidity for an hour or two, when exposed to water of the temperature of the surrounding air."

It follows, that the dry and warmed air for supplying rooms of great magnitude must be passed over an evaporating surface of great extent, in case that mode of hydrating it be adopted. Doubtless, warming the water would increase the efficiency of the plan. Dr. Antisell recommends spray or jets of water thrown into the air at a right angle to its current, which would no doubt be an effective and satisfactory mode of accomplishing the object where the necessary facilities can be established, among which space is indispensable. The objections to the use of steam, on an extensive scale, for hydration, are, the production of

noise, and, as alleged, of odor, and its imperfect dissolution in the air before entering the chamber. It passes on with the current of air for some time before it becomes dissolved and incorporated with it, and moisture is deposited upon all surfaces with which the volume of air comes in contact. There is no arrangement for introducing steam into the air passing to the halls, but it was provided for the air directed to the committee rooms and passages. The plan was not found to work well, and has not been in practice.

DUST RISING IN THE HALLS.

4. Dust rising in the halls from the floors. This defect arises from the introduction of air through horizontal openings in the floors, and is an inconvenience which should be abated, if possible.

In Dr. Reid's arrangements for ventilating the former House of Commons, mats and Russian scrapers were provided in the lobbies to secure the greatest possible exclusion of every source of impurity from the floor; the air being admitted through the floor by numerous apertures.

This difficulty of dust rising in the room, as well as the introduction of refuse substances into the horizontal openings in the floor, would be mitigated, though not entirely removed by the introduction of the air through the risers of the steps behind the seats of members. That was the original plan, but it was abandoned, as was also the free introduction of air into the sides of the room, because of the unpleasant currents produced. No doubt the latter effect would be decreased, if not removed, by proper hydration of the air; for it is quite certain that a current of dry air, although at a high temperature, will produce chilliness, on account of the rapid evaporation caused by it.

INEQUALITY OF TEMPERATURE.

5. Unequal temperature in the halls at the same level. The statements of temperature which appear in the evidence establish and illustrate this point; the temperatures given of the hall of the House are average ones; observations of a number of thermometers, at the same level in various parts of the hall, differing several degrees from each other, being taken. The Senate chamber temperatures are those of single instruments with their particular locations noted, differing, in some cases, five degrees or more from each other at the same level, but on opposite sides of the chamber. The certain result of these differences of temperature is to cause unequal movement of the air and to disturb the regularity of the ventilation. The air will ascend unequally in different parts of the halls, and perhaps, also, some disturbance of sound will be thereby produced.

EXTREME HEAT.

6. Extreme degree of heat in the halls. The thermometrical observations, beside showing differences of temperature, show also an excessive degree of heat. The average exceeds 70°, whereas it should not exceed 65° to 68°.

"In private houses the air should never be allowed to remain above 70° when warmed by heated air; when heated air is used in connexion with open fires, or other radiating bodies, the temperature will not often require to be above 65°." (*Wyman*, p. 188.)

"The best temperature for a room is 65° to 68°. (*Youmans*, s. 21.)

Temperature in former House of Commons. "The house is heated to 62° before it is opened, and maintained generally at a temperature varying between 63° and 70°, according to the velocity of the air passing through the house." (*Reid*, s. 659.)

A proper temperature is fixed by Dr. Antisell, in his testimony, at 66°. In

fact, a temperature exceeding 70° in the halls would be intolerable were it not for the aridity of the air; because of *that*, rapid evaporation takes place, rendering individuals less sensitive to the presence of heat. But the degree of heat to which individuals are subjected in the halls is probably injurious, and is in more marked contrast to the external temperature than is desirable. These observations relate to the winter and spring months, but the temperature of the halls in summer is often offensively high during both day and night sessions; for the heat passing through the roof into the halls by day, and the heat thrown down by the lights at night, are equally intrusive and objectionable. There was no necessity for establishing the conditions from which these effects follow; and the heat, which sometimes reaches nearly 90° in the halls, is productive of much discomfort, is injurious to health and obstructive of legislation. In summer the air is sufficiently moist, but temperature is less subject to regulation than in winter.

COMMUNICATION WITH AIR SPACE ABOVE THE CEILING.

7. The air of the halls is not kept distinct and apart from the air of the spaces above the ceilings. It is, therefore, subject to the influence of the roofs and of the lights. From this cause the ventilation of the halls is disturbed, and rendered imperfect, as will be shown under subsequent heads.

THE ROOFS.

8. The roofs are exceedingly objectionable as they exist at present, composed in part of metal and in part of glass, generating cold or admitting heat according to season, and conducting the noise of storms enormously and offensively to the halls. In erecting them, it seems to have been forgotten that this Capitol was not to be an Egyptian or Grecian temple, under a genial sky, nor even a Roman church, in the mild climate of Italy, but a great structure for the use of legislative bodies, in a comparatively inclement location upon the banks of the Potomac. Windows upon the sides, for lighting the halls, if made double, would not only have accomplished their office more perfectly than a glass roof, but would have protected the air of the chamber from all injurious influence of the external atmosphere, and from the intrusion of all external sound; and even the entrance of solar heat, now enormous, and incapable of regulation by the roof, might have been excluded, by shading, when necessary, the windows exposed to it. Light from side windows would be soft, natural, cheerful, and diffused, producing perfect illumination of the whole interior space, including the galleries, now so unequally and imperfectly lighted. And, finally, windows, unlike the roof, might be thrown open at pleasure, and thus, at proper seasons and upon fit occasions, rapid and thorough ventilation of the halls secured.

THE LIGHTS.

9. The particular arrangement for lighting the halls by gas jets above the ceiling is another defect requiring attention. The jets are very numerous—those used for lighting the hall of the House exceeding twelve hundred in number. The amount of heat created by them is very great, and the quantity thrown down into one of the halls at a night session increases the temperature of the hall from three to five degrees. This is peculiarly disadvantageous in summer, and renders night sessions uncomfortable, there being no effective arrangement for cooling the hall. There is an unnecessary consumption of gas, and the products of combustion are not effectually removed.

Dr. Reid says: "When any vitiated air is produced by a gas lamp or other artificial light, or by any manufacturing operation, too much importance cannot be attached to the desirableness of involving it directly in a stream or current of air by which it is conveyed to a channel where it cannot possibly contaminate the air of respiration." (S. 458.)

It is to be remembered that there is extensive communication between the hall and the air space above the ceiling, where the lights are placed, through numerous apertures along the ceiling, allowing impurities of combustion to pass into the halls with any downward current. And Dr. Antisell explains, that the accumulation of hot air under the roof without sufficient means of exit is to back up against the out-going currents from the hall and prevent their escape.

There can be no doubt that comparatively few lights arranged with reflectors and ventilating chimneys, would light the halls perfectly, would throw down but little heat into them, and would thoroughly ventilate the air spaces above the ceiling, assuming that they were cut off (as they should be) from any communication with the halls.

IMPERFECT REMOVAL OF AIR.

10. One principal defect of ventilation is, the imperfect removal above of the vitiated air of the halls. Under this head two points are to be considered: 1st. That the avenues of escape for the air are inadequate, and, 2d, that no exhausting power is applied. Whatever of escape takes place is simply from the natural ascent of heated air, and this action is insufficient and irregular from defective arrangements. In the case of the Senate hall the apertures for the escape of the air have a deficient capacity of one-sixth as compared with the entrance shaft, or passage below. The velocity of escape is deficient also to the extent of one-third as compared with the entrance movement produced by the fan. Great irregularity and imperfect ventilation are the necessary results.

As to the application of artificial power for the removal of the air, Dr. Antisell says: "The chief power should be placed at the point where the air is thrown out or removed from the building. I look upon a fan for the introduction of air as of secondary importance compared with a fan placed at a point where the air is removed. The object is to remove the air that has become impure, and it may be done much easier and with more certainty if the power is applied at the removing point."

Question. "Do you consider the application of power for the removal of air from a chamber more important than for its introduction?"

Answer. "Certainly; that is the main point. The main power should be applied where the air is to be removed, and for this reason: You are never sure, in driving air in, that it arrives at the point desired; but if you take it out of the room the thing is palpable."

Now, at present, the air is forced by fans into the halls and then allowed to take its own course, subject, however, to all the disturbing causes which exist in the halls or above them. No power is applied to produce certainty and regularity in its removal.

CARBONIC ACID GAS.

The presence of carbonic acid gas in the halls is, no doubt, in excess of the quantity contained in the external atmosphere, but the committee have not been able to obtain any exact determination regarding the quantity present, either at ordinary sessions or upon extraordinary occasions. The detection of this gas, and an exact determination of the amount of it contained in air, require skill, careful attention, and instruments and materials of analysis of much perfection. Of atmospheric air in a state of ordinary purity, carbonic acid gas constitutes but about four parts in ten thousand, and even in air overcharged and rendered unhealthy by its presence, the quantity contained is exceedingly small. But the examination upon this point now being prosecuted by Dr. Charles M. Wetherill, of the Smithsonian Institution, will furnish information approaching exactness, as his capacity and fidelity are both unquestionable. In the absence of reliable information, no clear opinion can be formed upon this subject, but

the committee are induced to think that the contamination of the air of the hall from this cause, is not very excessive or injurious. The reasons for this opinion are, the great size of the halls, the fact that notwithstanding defective movement of the air in ventilation, the quantity of air removed within a given time must be very considerable, and that the halls are usually occupied but a few hours at one time. Upon extraordinary occasions, when the galleries are well filled, it is probable that defective ventilation permits an unhealthy accumulation of this pernicious gas, and its enormous production by the lights, without perfect exclusion from the halls, may produce contamination of the air, even below the ceiling.

Such, then, are the existing defects to which the attention of the committee has been directed, and they may be briefly summed up as follows :

That the air is taken from an improper place, where it contains dust and is over-heated in summer. That it is over heated by steam pipes. That the air as introduced into the halls during the winter and spring months of the year does not contain more than one-third to one-half the moisture or vapor of water required at the temperature to which it is raised. That its aridity is a capital defect, and demands radical change and amendment. That dust rises in the halls from the introduction of the air through the floors. That temperatures are unequal in the halls at the same level.

That the heat is extreme in the halls, at least by 5° or 6°, and most excessive in summer, both by day and night, from the influence of the roofs and lights.

That the air of the halls is not kept distinct and separated from that between the ceilings and roofs.

That the roofs are very objectionable both from their construction and the materials of which they are composed, and that for the glass roofs, side windows, made double, would be an admirable substitute.

That the present arrangement for lighting the halls is bad.

That the removal of the air from the halls is imperfectly accomplished, the outlets being inadequate, and no exhausting power provided.

THE PLAN OF IMPROVEMENT.

The changes and improvements proposed by Mr. Anderson, the architect, are stated in detail in his report to the committee, which is appended hereto, and are shown and illustrated by his plans and drawings which accompany it. He proposes to obtain air from situations upon the bank west of the building, through vertical shafts of some elevation ; to conduct it through protected passages into the sub-basement, and then conduct it upwards through appropriate passages to air chambers outside and near the upper part of the halls. From these distributing chambers it is to pass through ducts over the ceilings, and obtain admission to the chambers through the present apertures in the ceilings. The entire movement of air so far is to be produced and regulated by a powerful fan placed near the bottom of the ascending passage, and provision is made for warming the air upon its way by hot-water pipes, and for cooling it in summer by the use of ice. He proposes also to place jets of water in the outer entrance shafts, and to provide most ample and effectual arrangements for hydrating the air before it reaches the ceiling. The space at command will enable this to be done perfectly, thus removing wholly one of the main defects in the existing arrangement. The removal or exhaustion of the air from the halls will be through the floors and through the present passages used for the introduction of air, powerful fans being again used for accomplishing this purpose.

THE PLAN CAN BE REVERSED.

Now, whatever opinion may be formed of the merits of the plan thus far, as to the movement of air in the process of ventilation, it is manifest that it pos-

sesses the merit of being capable of exact reversal. At any time, if desired, the air may be introduced from below, conveyed upward through the halls, and exhausted through the proposed entrance-passages of the place; in which case it would become, as to its general features, almost the identical plan successfully adopted by Dr. Reid for the ventilation of the former House of Commons. In fact, such reversed plan would have a material advantage over the Reid arrangement in the use of an effective exhausting-fan instead of a fire and chimney. Dr. Antisell and Mr. Cluskey correctly state that such reversal of the plan, as to direction of the movement of the air, could be made with little expense and alteration if desired hereafter. This consideration meets any possible objection to the downward movement of air through the halls, by those who may not be convinced of its utility, efficiency, and success.

ELEVATION OF CEILINGS AND ROOFS.

But a most material part of the proposed plan—that which involves most of expenditure and requires most of careful investigation—is the elevation of the ceilings and roofs, with the accompanying and consequent changes.

It is proposed to elevate the ceiling and roof, in each wing, about fifteen feet; to make the roof double, the inner one counter-ceiled with non-conducting material; to substitute a limited number of lights, with reflectors and ventilating chimneys, for the present numerous gas jets, and to insert windows around the whole upper part of the hall in the space gained by the elevation of the ceiling and roof. Thus, the air-space above the ceiling, separated entirely from the ducts through which the air for the hall is introduced or exhausted, will be ventilated by the chimneys of the lights; all the products of combustion will be at once removed; abundant light, with little heat, will be produced; all influence of external heat or cold and all noise from storms will be prevented by the double roof and the insulated air space above the ceiling, and perfect illumination of the hall and galleries, with other advantages, secured by the side-windows introduced. There can be no doubt that these would be most valuable improvements upon the points involved in this inquiry, to wit: the heating, ventilation, and acoustics of the halls of Congress.

The laws of architectural proportion require the elevation of the ceilings, and the appearance of the halls (and particularly the hall of the House of Representatives) would be greatly improved thereby.

The original plan of Mr. Anderson, which was mainly followed in the construction of the halls, and in their location in the centre of the wings, contemplated windows above, as now proposed, and it is not likely that any competent architect would ever propose such rooms, so located, without any possible access to solar light except through the roofs.

Besides, it is insisted upon by professional gentlemen, and appears to be true, that the architectural effect of the Capitol, viewed externally, would be improved by the moderate elevations proposed to be added upon the wings. The sky line of the structure would be somewhat broken, which would comport with the style of Roman art upon which the Capitol was originally designed—the Roman-Corinthian order—and the attention now fixed, concentrated, and absorbed by the great central dome, would take in the whole structure and recognize the wings in which the great legislative houses, composing the Congress of the United States, are assembled.

The elevations would recede inwards some distance from the outer vertical line of the wings, and none of the present or proposed exterior work upon the wings would be disturbed.

OBSERVATIONS UPON THE PLAN.

Recurring to the details of the plan of changes already stated, the committee have some additional observations to submit upon particular points.

It is questioned by a most competent witness examined by the committee, whether entrance shafts for the external air so high as twenty-five or thirty feet, are necessary or expedient, and also whether jets of water in those shafts would be an advantage. The committee conclude that neither point is very important, and, however determined, will not materially affect the general plan; a proper place for obtaining the air being the main object to be secured in the first instance. As to passing the air over ice in the summer, for the purpose of cooling it, the committee think that the use of cold water in the pipes used in winter for warming the air would usually be sufficient for a proper reduction of temperature. In hydrating the air the use of an extensive system of jets or spray of water, reasonably warmed, in the ample space at command by the plan, would be the most efficient and satisfactory. Any use of steam must be in moderate quantity, and at some considerable distance from the point of entrance into the chamber, to permit its perfect absorption and dissolution in the air. Level evaporating surfaces would require to be of great extent; their arrangement might impede the movement of the air in ascending, and might cause accumulation of dirt or impurity. The plan of hydration here suggested is contained in the testimony of the intelligent and able witness already mentioned, and is concurred in by the architect. Another suggestion from the same source, as to an easy improvement of the openings of the ceilings for the passage of air, is believed to be judicious. The windows to be introduced into the upper part of the halls should unquestionably be double, and, in the opinion of the committee, no stained glass should be used in their construction.

THE DOWNWARD MOVEMENT OF AIR.

But one additional feature of the plan remains to be considered—the proposed downward movement of the air through the halls. In his “Notes upon Acoustics and Ventilation,” submitted by Captain M. C. Meigs to Jefferson Davis, Secretary of War, May 19, 1853, the advantages of the descending movements are stated to be, the avoidance of all eddies, a nearly homogeneous and tranquil atmosphere, and the immediate removal downwards of any dust from the carpet which would thus be prevented from rising to be inhaled into the lungs; and it is insisted upon that good acoustic results would be secured. The plan of Captain Meigs for the ventilation of the halls of Congress was undoubtedly derived from Mr. Anderson, whose plans, with printed explanations, were in his possession for some time, and obviously adopted and followed to a great extent in the construction of the wings. The “Notes on Acoustics and Ventilation,” elaborating the advantages of the descending movement, are therefore appended to this report, and in connexion therewith the emphatic indorsement of them as correct and judicious by Professors A. D. Bache, of the Coast Survey, and Joseph Henry, of the Smithsonian Institution. The views thus presented and indorsed were the views of Mr. Anderson, and are exactly applicable to the plan now proposed by him, and they retain whatever of soundness and force they possessed in 1853, notwithstanding they were subsequently departed from in the construction and arrangements of the halls.

But there are two material advantages of the descending movement of air which were not stated in the “Notes” referred to, to wit: the equalization of temperature in the halls, and particularly near the floors, and the economy or saving of heat; both which are important and evident. They are stated by Dr. Antisell, and to be taken into consideration in determining the plan now

under consideration. For the differences of temperature upon opposite sides of the hall, constituting one of the existing defects, would be wholly avoided by the downward movement. The tendency of the air after its admission at the ceiling, and during its progress to the floor, would be toward equalization and uniformity of temperature, and the *movement* also would be comparatively regular until acted upon very near the floor by outgoing currents. The argument, therefore, for improved acoustics by the downward movement, as given in the "Notes," is strengthened by these considerations. The facility of heating the hall, and economy in the use of heat for that purpose, would also be greatly increased. For a considerable time is now required for warming one of the halls, inasmuch as the heated air when first introduced passes rapidly to the ceiling and roof, the colder air remaining in, or falling to, the lower parts of the hall. The process must therefore be continued until the entire space is thoroughly warmed, and if the air is introduced at a proper temperature several hours will be required for this purpose. Besides, a great amount of warm air is wasted in heating the space between the ceiling and roof, and a large amount necessarily lost by the roof itself, as before mentioned. But in introducing the air above, as proposed, with an exhausting power below, the room can be warmed rapidly, the exhausting fan withdrawing the cold air with certainty and despatch and permitting its place to be occupied by the descending volume of warm air. No heat will be lost by the roofs, nor diverted to the air spaces between them and the ceiling.

The "Notes" correctly state, that "by a steam-driven fan, or other mechanical means, we can pump air, in any desired quantity, into any spot to which we choose to direct it."

The fan is now the accepted instrument for the movement of air by either the plenum or vacuum impulse, where great efficiency is desired, and its improvement has been carried so far as to leave little to be desired. Where the size of a building warrants its use, it gives any desired power with certainty and cheapness, and is capable of adjustment in almost any position where the limited space required by it can be obtained. And it has superiority over a chimney with fire, in its capacity to move air in *any* direction, and to move it regularly and with greater efficiency. Placed as a power to supply or exhaust a room, its force can be exactly calculated and the result intended precisely accomplished. The exhaustion of the air of a room by it in a downward direction can be made at pleasure. It is simply a question of the application of a power entirely at command, in an intelligent manner.

A few notable instances of downward movement in ventilation may be mentioned, and first that of the model Pentonville Prison of which Professor Wyman says: "The arrangements which have been in operation ventilating and warming the cells, and maintaining an equable, general temperature within the prison, have been attended with complete success." The air is introduced through horizontal passages warmed by hot-water pipes, and passing upward along flues, is admitted into each cell at the top immediately under the ceiling. It is withdrawn from the cell on the opposite side, at the floor, and passing upward through flues is eventually discharged by a high shaft above, into which the smoke-flues from the heating apparatus also enter. "It will thus be seen that a communication is established, first, from the outer air through the warming apparatus to the top of each cell, and thence from the floor of each cell through the extracting flues and ventilating shaft into the outer air again."

"A perfect diffusion of air takes place in the cell, the difference of temperature at the ceiling and floor can scarcely be detected, and will seldom exceed one degree, and it may be inferred that the difference of power required for extracting the air at one or the other of those levels would be inappreciable."—*Wyman.*

Of course, if the air were required to pass down from the cells to the basement, some appropriate power would be necessary to accomplish the movement.

The ventilating movement of air, as above described, is assisted in the winter by the smoke and disposable heat in the shaft above, from the heating apparatus, and in summer a small fire, maintained at the bottom of the shaft, is used. In short, the assisting power used is very slight, and yet it is said by an intelligent author, that "so admirably is the ventilation of the building contrived and kept up that there is not the least sense of closeness pervading it; for we feel immediately we set foot in the place, how fresh and pure is the atmosphere there."—(*Mayhew's Prisons of London*, p. 120.)

A diagram of the fine Portland prison, showing the introduction of air into the compartments, both above and below, on one side, and its exhaustion on the opposite side at the floor, is to be found in the Prison Commissioners' Report, volume 29, for the year 1850.

In the case of the New York Hospital, upon Broadway, designed by Mr. Anderson, and where the plan of ventilation is successful, the air is obtained through shafts of neat appearance about twelve feet high, placed outside the building, is carried into a passage of the sub-basement, from thence admitted to the heating apparatus above, there warmed by hot-water pipes, and permitted to ascend and enter the wards upon the sides. It is removed upon the opposite side, through openings into flues above and below, either of which may be used, but those at the floor are found most efficient in practice and remove all offensive odors of wounds and sickness from the room. The exhausting flues are connected with a small room above, in which hot-water pipes are placed to assist the movement and discharge of vitiated air. The statement of the engineer in charge is attached to this report, and confirms the opinion of a member of the committee who visited the building, that the air of the wards is good, and the whole arrangement of ventilation judicious. The use of a fan would increase efficiency of movement, if that should be desired, in this or any other building of like arrangement.

In the case of the new emigrant hospital now in course of erection on Ward's island, New York, the air is obtained through an elevated shaft placed some distance from the building, and conducted through brick ducts, and then upward through iron shafts, through openings in which it is admitted into the different wards. It is removed through openings near the floors, behind the patients' beds, and discharged into the atmosphere in the usual manner. The letter of the architect, describing the plan, is hereto attached.

OBJECTIONS CONSIDERED.

Professor Wyman states very clearly the objections to the downward movement of air which have prevented its general adoption in buildings with much force and clearness; but it will be observed that they have no application to the plan now under consideration. The first is, that this movement requires that the openings for the escape of the air should be nearly as numerous and diffused as those for its admission in the ceiling, and for most evident reasons. Ordinarily, however, such numerous apertures at the floor cannot be secured; but in our case they already exist, and the objection fails. Another objection in ordinary cases is, that in the downward movement the lights must be provided with air entirely separate from that which supplies the room, in order that the gases and other products of combustion shall not be breathed. But in the present plan the separation of the space where the lights are placed from all communication with the air of the hall is one of its main features, and easily secured. We may add, that the perforation of the ceiling for the diffused admission of the air is often inconvenient or impossible, and that facilities for op-

erating an exhausting power below, do not exist. None of the ordinary difficulties opposed to the descending movement are, therefore, to be encountered in the present case. Its practicability however, is admitted by our author in strong language, and its desirability indicated where the conditions exist for its application. He says: "The flow of air may, when under the control of an efficient moving power, take any direction that may be desired; it may move from below upwards, or the reverse, or in both directions at the same time. * * * There is no impossibility of producing a constant and equable downward movement. * * * The unoccupied ceiling, in its whole extent, may be used for the admission of air which may reach the lungs uncontaminated by dust or contact with the body. This is the movement which constantly arises in rooms heated by means of fire-places, &c."

He explains that heated air first rises to the ceiling and afterwards, upon cooling descends and is removed by the chimney.

It is a common practice in ventilation upon the removal of ascending air at the top of the room, to take it down a side passage and deliver it into the external atmosphere. This may be accomplished by a fire-place at the bottom of the passage, connected with an upright shaft or chimney, as in the case of the temporary House of Commons, or much better, both as to efficiency and regularity, by an exhausting-fan. But manifestly this downward exhaustion of air accomplished in the side passage may be accomplished equally well in the room itself as to air introduced at the ceiling.

Only one point remains to be noticed under this head—the ascent of impurities from the bodies of persons occupying a room. Evaporation from the skin and air breathed from the lungs convey impurity to the air, and cause an ascending movement in the first instance, and it is said that from this cause the descending air may be contaminated before it reaches the person. It is true that air breathed from the lungs is usually warmer than the air of the room, and has an ascending force mainly due to the elasticity of its watery vapor. But its superior temperature is quickly lost, and, in accordance with the well-known law of diffusion of gases, it becomes incorporated with the descending air, and passes downward. As some time is necessary to contaminate the air, it follows that in a descending movement all impurity is removed below the region of respiration before it becomes appreciable or injurious; and as the whole air of the room is changed within a period of less than ten minutes, there can be no such accumulation of impurities in any particular section of air as to render it offensive or objectionable. The floors of the galleries being perforated with numerous openings for ventilation, no vitiated air produced there will pass down to the floor of the hall.

The committee have given this elaborate examination to the subject of ventilation by a downward movement of air, not because its approval is indispensable to the plan proposed by the architect, but because it is desirable to adopt a plan which will allow the application of that particular arrangement. The plan will stand good for an upward movement of air through the halls, but, for the reasons already given, sustained by the authorities cited, the downward movement appears to promise the most complete and satisfactory results in ventilating the halls of Congress.

RÉSUMÉ.

In summing up the whole case upon the architect's plan, it may be stated to involve the elevation of the ceiling, the insertion of side windows, the removal of the glass roof and substitution of a double roof, the separation of the air-space above the ceiling from all communication with the hall, the substitution of fewer lights with reflectors and ventilating chimneys for the present lights, the introduction of pure air from an external point by a fan, with proper warming and

thorough hydration, and its effectual and regular removal from the hall by an exhausting fan; and, by the plan, either an upward or downward movement of air through the hall may be established; a change from one movement to the other requiring only a change of location in the heating and hydrating apparatus. Upon the merits of the plan reference is made to the testimony of Mr. Cluskey and the other witnesses, and particularly to the following question and answer in the examination of Doctor Antisell:

"Question. What do you say as to the feasibility and success of Mr. Anderson's whole plan as compared with the present arrangement?

"Answer. It would be much more effective than the present plan, and feasible in its details."

The evidence of the same witness upon the utility and advantages of an exhausting fan in ventilation is also worthy of particular notice.

THE ESTIMATES.

The concluding subject for examination under the resolution appointing the committee is the cost of the proposed changes. The careful and elaborate estimates laid before the committee, and herewith reported, show a total expenditure for the Senate wing of \$113,185 25, independent of an attic for the erection of which the estimate is \$37,500. For the House wing the expenditure is \$15,921 30 more. The erection of an attic upon it would cost the same as for the Senate wing, being of the same size. These estimates are made at the present prices for labor and materials, and as to nearly the whole proposed outlay assume the form of proposals by a competent party. Underwritten his estimates for the wings, respectively, (including nearly the whole of the work and materials,) Benjamin Severson, the directing engineer in erecting the present ceilings and roofs, proposes to execute a contract at the prices stated, and to give ample security for its performance.

If the plan of improvement now submitted to the two houses be regarded with favor, the committee recommend that the improvements of the Senate wing be executed between the termination of the present and the commencement of the next session of Congress. There will be ample time for this purpose, and an advantage in concentrating attention and effort upon the one wing. In proceeding, subsequently, to the improvement of the House wing, the temporary roof, fixtures, and implements used in the work upon the Senate wing can be transferred to the other; and any improvement or modification of details in the general plan can be applied in executing the work upon the House wing.

The expenditure for the Senate wing, exclusive of the attic, will fully secure all the changes and improvements proposed in the plan examined by the committee; in other words, will secure the elevation of the ceiling and roof, with side windows and all the arrangements of ventilation. Attics, however, will properly follow the other proposed changes, and are required for architectural effect. Marble, already on hand, can be made available in their construction.

With this question of expenditure upon the proposed improvements, a collateral one, relating to the wings, may be considered. The present plans of the Capitol extensions indicate expensive colonnades upon the north, south, and west sides of the building, to be placed upon the arcades already erected, and an appropriation of \$300,000, applicable to their construction, was made at the last session. That appropriation remains unexpended, and the question arises, whether it would not be well to withhold it from the volume of public outlay. There is no necessity for the present expenditure of this large sum, and the utility and advantage of making it, at any time, is matter of debate. Mr. Anderson, in his testimony, says:

"I recommend that you finish these arcades with cornice and balustrade at

the top, which will produce a good architectural effect by carrying out the principles of a Roman structure more fully than to finish them as heretofore proposed. It is not intended to put porticos but colonnades over the arcades. The plan is, to carry round the entablature on those colonnades. The effect of it would be simply this: A column before each pilaster has no object of any kind effected by it. It involves an additional expense of marble-work and excessive weight, without any possible advantage. Standing at right angles with the building these columns would not be seen more than the pilasters would which stand by them; they would merely obscure the pilasters, and at the same time deprive the numerous offices on each side of the building of air and light. It is an object in architecture never to introduce an ornament without a purpose. In every well-designed architectural building there never is an ornament introduced that has not its object, which this feature of the design of the Capitol has not. The same observation is applicable to all of the four colonnades—north, south, and two west.” * * * “A balustrade would be a great deal cheaper than the other plan, and it would, at the same time, admit more air and light.” These views seem to be forcible and just, and are, therefore, brought to the attention of Congress for consideration.

Upon due reflection, the committee are induced to submit the question of withdrawing the appropriation for the colonnades, or at least deferring the expenditure, in view of an inquiry through an appropriate committee as to their utility and merit. If balustrades can be substituted for them without disadvantage, a very large amount of money can be saved to the treasury, and the burden of the expenditure now proposed by the committee for real and necessary improvements in the Capitol wings be mainly avoided.

ARCHITECT'S REPORT.

To the honorable the Joint Select Committee of the Senate and House of Representatives of the United States, on the subject of lighting, heating, ventilating, and the acoustics of the two halls of Congress.

The report of Charles Frederick Anderson, architect and civil engineer, of the city of Washington, D. C., most respectfully represents—

That in obedience to your appointment and directions, made in pursuance of the concurrent resolution of the two houses of Congress of the 10th of May last, the undersigned has diligently applied himself to a minute examination of the various parts of the north and south extensions, and to the various plans and drawings of their several parts which will necessarily have to be used or which will be slightly affected by the plan by which he proposes to improve the lighting, heating, ventilating, and acoustics of the halls of Congress, with a view to discover the most direct, easy, and economical manner in which the plan can be applied to the structure as it now exists.

This examination has the more strongly and clearly developed the errors of those parties having charge of the construction of these extensions, in departing from the plans which the undersigned had the honor to furnish for the accomplishment of these objects, and which had been submitted to President Fillmore, and been supported by Mr. Webster, then Secretary of State. During the administration of President Pierce these same plans were submitted to him, and fully examined and approved by Montgomery C. Meigs, then captain of United States engineers and superintendent of the Capitol extension, and by Professors Bache and Henry, and were also approved by the Secretary of

War, under whose direction the works had been placed, as will fully appear by the documents appended to this report; and yet, strange as it may appear, Captain Meigs, in his actual construction of the extensions, not only rejected this plan for the lighting, ventilating, and heating of the legislative halls, but actually reversed the whole system, making the error radical, and therefore more difficult now to remedy or correct. However, by a thorough study and examination of all the parts, the undersigned flatters himself that he has (by his accompanying plans) established the means of making the desired improvements with the least possible alteration or change in the interior arrangements; none, in fact, which will occupy any material apartments or space of the extensions, or injure or interfere with the present appearance and arrangement of the halls of Congress in any way, except to lighten up and greatly improve their interior appearance, as well as the exterior superstructure; all of which will be shown and explained by this report, and by the drawings and plans herewith submitted.

The erroneous plan adopted by Captain Meigs, which has been operating since the occupation of the halls, and now exists in both houses, receives the exterior air under the ground floor from off the surface of the overheated and dusty terraces, furnishing much of the bad air from beneath, carried to its surface by evaporation and side currents of air from the ground, and this air is also tainted with much of the odors caused by the machinery near which it passes.

The air injured by these causes is drawn to the openings in the cellar or sub-basement walls by the action of the fan-wheel, which forces it up under the floors of the two houses, where it finds vent through the gratings under the members' desks, the risers in the floors, and openings round the halls, and in the galleries. By the action of these currents the vapors introduced from below rise from the floors of the halls, and keep in constant motion the vitiated air generated by the breath of the persons occupying the floors and the galleries, of which carbonic acid gas, being heavier than the purer part of the atmosphere of the chambers, is constantly tending to and settling upon the floors, and would remain upon the floors, like a malaria or noxious miasm, were it not kept in motion near the floor by the currents of dirty air coming up through the gratings and registers; there is added to this bad air all the dust produced by the walking or movements upon the floor, independent of that brought from below. This atmosphere of the halls, as at present arranged, cannot be otherwise than unwholesome, and, were it not for the frequent opening of the doors leading into the halls, would prove much more oppressive and intolerable than it is. To persons of weak lungs, however, the deleterious effects of the present arrangement are more immediate and sooner felt than by persons blessed with more robust constitutions; but even these may be taken sick without any apparent cause, unless it can be traced to the fact that the seeds of the sickness have been unconsciously imbibed while sitting quietly in their seats, and much more so while engaged in speaking, or in the heat of debate, when the lungs must of necessity become inflated and irritated by this pernicious atmosphere.

From these remarks it will be manifest to the plainest understanding that a great error has been committed in attempting to furnish the proper air to the halls, passing it through and mixing it up with the vitiated air as above explained, instead of introducing the pure air into the upper elevation of the halls, and drawing down the impure atmosphere through the gratings in the floor. Having thus simply explained the errors of the present system, it is the purpose of the undersigned to explain the principles and the manner in which he proposes to remedy the existing errors and defects, and furnish to the national councils a pure, temperate, and refreshing atmosphere, of an equal temperature at all seasons, in which members may with safety exercise their lungs while conducting the high and important legislation of the country, with ease and pleasure, and without any apprehension of receiving injury from the medium

through which their views, arguments, and business transactions may be expressed in the two Houses.

To accomplish this purpose, the undersigned will endeavor to be as succinct as the nature and the importance of the case will admit of, and, with this view, will divide his explanations as follows, viz :

1st. The undersigned proposes to furnish an abundant supply of fresh, unadulterated air, rarified in winter, hydrated, purified, and cooled down to any desired temperature in summer, to the halls of Congress, so as to insure a uniform temperature at all seasons, with a healthy atmosphere, to be effected by vertical air shafts to be built on the banks on the west side of the Capitol extension, one for each wing, twenty-five feet high over the level of the flagged terrace, and in the position marked on the accompanying plans of the sub-basement floors, (*specified by the red tint;*) through these shafts pure air, procured from that elevation, will pass into the air chambers on the sub-basement floors, through dry tunnels, seven feet six inches in diameter, built of hard brick and cement twelve inches thick, and cemented on the inside, so as to make them impervious to damp, with a fall to the vertical shaft, in which shaft a jet of pure water will play at discretion, and be capable of adjustment in the engine-room.

In the sub-basement air chambers are iron stands on which to pile ice in hot weather, and through which the hydrated and purified air will have to pass to the fan-wheel, which will force it upwards through the building to the upper air chamber arranged outside of the chamber walls, and from which it will pass into the halls of Congress through close air-tight ducts, made of two thicknesses of thin galvanized sheet iron four inches apart, filled in between with crushed pumice stone and liquid cement, passing through the perforations in the ceiling as through a sieve—this perforated portion of the ceiling forming the under side of these air ducts.

The large upper air chambers outside of the halls will be arched over with brick and cement, so as to render them impervious to the influence of the exterior atmosphere, either hot or cold, and the air ducts on the ceiling, which are fed directly from these large air chambers, are packed on three sides with non-conducting material, as before described, so as to transmit this purified, cooled, (or rarified,) air to the halls without being sullied by its passage through the atmosphere over the glass ceiling.

The undersigned has arranged four new fan-wheels to carry out his plan, two to force the air up and two to withdraw the vitiated atmosphere from the floors; one for each house. These are so formed as to possess five times the power of the present fan-wheel, but the power is completely under the control of adjustment. The flow of air into the halls may be as required, and will be regulated by the speed of the fan-wheel, which depends on the action of the engine.

When very cool air is required in excessive hot weather we can lower the temperature of the exterior atmosphere to any extent desired, in the halls of Congress, by placing ice in the vertical shaft as well as in the lower air chambers, and still further by the use of salt with the ice.

All this air passes from the vertical air shafts through the tunnel, which will be built into and covered up from the effects of the atmosphere by the present bank of earth extending to the basement air chambers, and from thence up through the building to the upper air chambers which supply the air ducts over the ceiling; will be made close, clean, and pure, with a drain built at the bottom leading to the vertical shaft from the lower chamber and the ice cellar, to take off the water introduced by the jet, the melting of the ice, or the rain water in the vertical shafts.

The undersigned has also annexed the adjoining cellars in each wing (now useless) for stores or ice houses, where a supply can be kept convenient to the lower air chambers for daily use when required. In cold weather steam ad-

mitted through the cluster of pipes now in use, but placed in the new air passage, will rarify the air to any temperature required on its passage to the upper air chamber, through which chamber a stream of pure water will be made to flow, so as to hydrate the heated air before it enters the halls. This can be accomplished by allowing the stream of either warm or cold water (to suit the temperature of the air) to flow over a continuous tray the full length of the upper air chamber, fitted with a gauze wire bottom and divided into compartments, so as to be able to adjust the amount of mist through which the ascending air will pass at right angles. The temperature of this air, subsequently, will receive additional protection at certain seasons by the admission of air through a register from the upper air chamber to the space over the glass ceiling, and the influence of the exterior atmosphere will be kept off the glass ceiling by means of a counter ceiling placed on the back of the iron rafters which support the roof and the ceiling, which rafters it will be necessary to strengthen to double their present capacity. This counter ceiling will be composed of crushed or broken pumice stone, filled in with liquid cement, resting on thin corrugated galvanized sheet iron; it will be five inches thick, packed close, made air-tight, and plastered on top with cement. This counter ceiling will prove to be a non-conductor of heat, cold, or sound from the exterior copper covering of the roof, leaving a space of three feet between the exterior covering and this counter ceiling.

This plan will effectually prevent the changes in the weather, either by heat, cold, or storms, from affecting the glass ceiling as it does at present, and which has been so much complained of; in fact, the temperature of these halls could never be properly regulated so long as the exterior atmosphere could control the temperature of the space over the glass ceiling, which is at present assimilated to a hot-house in summer and an ice-house in winter, besides transmitting noise from the effects of hail and rain storms, so annoying to the members of both houses of Congress. It will be only fair to all parties that it should be known that this system of lighting the halls of Congress by means of skylights is the only part of Mr. Walter's two designs which have been brought into operation by Captain, now General, Meigs, and which injudicious act is a principal cause of the heated ceilings and bad acoustics.

The undersigned proposes, as an extra or auxiliary means of heating the halls of Congress, in very cold weather, to place ornamental benches in the angles of the halls and in the bat-rooms, filled with coils of steam pipes, to supply additional heat on the floor of each house, which will obviate the necessity for heating the upper current of air too highly to be pleasant.

2d. The undersigned proposes to withdraw the vitiated air from the chambers without its remaining above the floors to become injurious to the occupants, and at the same time to regulate and insure good acoustics to both halls of Congress.

To accomplish these objects the present system will have to be completely reversed by using the same apertures for withdrawing the vitiated air from the halls of both houses and from the galleries that is at present used for admitting the air into these apartments, being the registers on the floors, in the galleries, and in the screens which enclose the halls, &c., &c.

This will be accomplished by means of powerful fan wheels, made to work in the passages which at present admit the air, and in as close proximity as possible to the openings under the floor, through which these fan-wheels will withdraw the vitiated air. The power of these exhausting fan wheels upon this air can always be regulated to a certainty by their velocity, which will be controlled by the action of the engine.

The current of fresh air passing through the halls downwardly will also be regulated in a great measure by the action of these exhausting wheels, which will regulate the acoustics, as will be made evident from the fact that the voice can no longer ascend to the roof and be lost in the space over the ceiling, as at

present. The compressed air forced through the perforations in the ceiling, as through a sieve, will oblige the voice to remain in the body of each house; it being an axiom in the science of acoustics that glass, next to water, possesses the greatest attraction for sound. The attraction of the voice produced by the glass-paneled ceiling over both the halls of Congress, as at present, will be obviated altogether by the introduction of the imperceptible flow of pure air into each house from the ceiling. As sound always accompanies the current of air, it will be decoyed from the glass ceiling, and conveyed into the body of the chambers and into the galleries, as above described, without a reverberation of the voice produced by the present low glass ceiling. The proposed elevation of the glass ceiling, besides improving the architectural proportions of the chambers, will materially assist in establishing good acoustics, as the large field of attraction for the voice will be further removed from the floor, besides being intercepted or arrested on its passage to the ceiling by the incoming flow of pure air through the many apertures in the ceiling, and a greater space will be afforded for the action of that incoming current to mix with the air in the chambers before it reaches the floors. The undersigned recommends that the system heretofore specified in the printed explanations which he furnished to Captain Meigs in 1853, be now adopted for conveying and dispersing the superabundance of sound on the floors to the galleries, and to the reporters' desk in particular, by inserting open slits in the surrounding screen, to which will be attached zinc tubes, which will arrest the voice and convey its redundancy from off the floor to the galleries. It will be perceived that by this system the voice cannot escape from the halls in consequence of this plan for admitting the pure air, and by means of these tubes the vibration of the voice or echo will be altogether done away with, so that the full effect of the voice will be rendered more agreeable by this wholesome atmosphere, produced by purified and compressed air. It will be seen, by the accompanying plans, that this change can be effected without interfering with the arrangements on the floors or galleries in either house, or the surrounding corridors, passages, or offices, in any way save by the occupation of one or either of several spaces, the selection of which may well be left to the honorable Committee on the Public Buildings, or any other authority deemed most appropriate, to select a passage for the pure air from the basement to the upper air chamber, which can be spared with the least inconvenience, that is, if the passage laid down on the plans for the Senate wing be not approved of. With this exception, it will be perceived by the drawings that this plan for securing good ventilation, &c., interferes with nothing in the halls that can be visible under the level of the cornice of the present ceiling which surrounds the halls of Congress; everything below that level will remain as at present arranged. According to this plan there will be two objects attained: first, to establish what is required by the concurrent resolution; and, second, that it may be effected with as few changes and at as small an expenditure of time and money as is possible; such a change, however, in the present halls of Congress might be considered cheap at any cost, as it will insure the health of the nation's representatives.

3d. This plan will furnish a good and agreeable direct light by day from windows opening on the exterior atmosphere, with a steady, clear gas-light by night, descending through the present glass-paneled ceiling, as elevated, but without the accompanying heat produced by the great number of gas-burners at present distributed all over the ceilings of the two halls of Congress, numbering about one thousand four hundred over the ceiling of the House of Representatives alone, the effect from which renders the heat of the glass and iron ceiling particularly oppressive.

To remedy the present defects, it is proposed to raise the ceilings over the two halls of Congress about sixteen feet, which will produce much better proportioned apartments, as the height of the present ceilings is altogether at va-

riance with architectural rule, or the laws which govern architectural proportions. This change, beside improving the architectural appearance of the halls, will afford room to insert a tier of windows extending all around each hall under the cornice and over the gallery doors, as shown by the accompanying longitudinal and cross sections. These windows will be the exact size of the windows in the committee rooms on the basement floors; a direct light will be admitted through the upper half of these side windows, twenty-six in number in the House, and twenty-two in the Senate, as well as a borrowed light through seven of the end windows in the Senate chamber, and through nine of the end windows in the House of Representatives. The upper half of the sashes will open on pivots, and when open will admit the air through the halls from the exterior atmosphere, but which will never be required in consequence of a sufficient supply of better air being at all seasons within command by means of the above arrangement; besides, open windows would of necessity damage the acoustics. These windows would be hid from exterior view by the erection of the high parapet, (called an attic in architecture,) on which will be placed the present balustraded battlement, and which is recommended in Senator Foot's report as necessary to relieve the present bad effect of the upper monotonous straight line of the whole building, which is at variance with Roman architecture, (the style of the Capitol building.) The increased elevation of the wings is further called for in consequence of the enormous size of the new dome, (copied from the dome of St. Paul's in London,) the new dome of the Capitol being fully one-third larger than it should be if constructed in accordance with the rules which govern the order of Roman architecture to which the Capitol building belongs. A dome is a prominent ornament to a classic structure, but always subordinate to the proportions and style of the building; but in our case the building is made subordinate to the dome. The published remarks of an educated northern tourist are particularly applicable, when he terms it, "The great dome, with the low buildings beneath, which form the Capitol of the United States." The base of this new dome is actually made to project beyond the front walls of the building, and rest on the projecting portico which forms the principal entrance to the rotundo. To elevate the wings will in some measure disguise this architectural blunder.

Thus it will be perceived that by this one plan two great objects will be effected—better light will be given and better proportions to the halls, and at the same time it will materially improve the exterior architectural appearance of the building. (See accompanying sections and elevations.)

The new windows will be filled in with stained glass, which will produce a soft and agreeable light.

It is proposed to light the Senate chamber at night by means of eight circular burners of Frink's patent, with powerful reflectors, one placed over each; and the House of Representatives with thirteen circular burners, having a reflector over each, by which means the light can be increased to any amount desired. and the present objectionable heat from the great number of unprotected burners on the ceiling will be altogether done away with, as there will be placed over each reflector a copper dome, surmounted by a copper chimney eight inches in diameter, passing out vertically through the roof, which must attract all the heat upwards, while it reflects all the light downwards. To elucidate which the undersigned submits the accompanying drawings of Frink's patent reflectors, which he would recommend as the best means of lighting the halls of Congress.

The air which this plan introduces through a register from the upper air chamber into the open space between the glass ceiling and the new counter ceiling will increase the draft upwards from the burners under these reflectors and over the glass ceiling, through the flues over the reflectors, which will remove the possibility of communicating any heat from the burners to the glass

ceiling, while the counter ceiling will protect the glass ceiling from the influence of heat or cold from the exterior atmosphere.

The undersigned begs leave to submit a drawing of Reigart's improved fan-wheel, by which he proposes to supply and control the pure air to be furnished to the halls, and to draw the vitiated air therefrom.

He also begs leave to submit specifications and detailed estimates for the construction of the different works more fully described by the plans for the alterations, which he has the honor to submit in obedience to the instructions of the honorable joint committee.

To remove all apprehension upon the subject, the undersigned would respectfully state that these plans will not interfere with the present condition or appearance of either of the halls below the level of the present glass ceiling, while the arrangements above will establish better architectural proportions, symmetry, and beauty to these halls—a desideratum which he trusts it will not be considered out of place for him to say would have been effected in the original construction of the north and south extensions of the Capitol had his plans been fully and fairly carried out.

Desiring to confine this report to a plain and simple statement of what has been required of him by the joint resolution and the directions of the joint committee, the undersigned has omitted to introduce any reference to the authorities sustaining the principles of the plans which he has the honor to propose; but to aid the judgment and strengthen the opinions of this honorable committee and those of the honorable members of the two Houses, who are so deeply interested in the subject-matter under consideration, he would beg leave to append notes, communications, and reports of high authorities, thereby removing the idea of any presumption on his part of presenting a plan whose principles had not been fully approved by science and practical experience, and which approval the undersigned made himself fully aware of before he submitted his first design, in answer to the published invitation to the architects of the United States, in the year 1850, by practically investigating the different systems for ventilating public buildings in Europe, in particular the Bank of England, the United Service Club House in London, the new British Houses of Parliament, the Millbank Penitentiary, and the Pentonville Model Prison. He investigated the system of ventilation adopted in the two last-mentioned establishments under an order from the Home Secretary, Sir James Graham—which order will be found recorded in the visitors' book during the summer of 1845—a copy of which could be had upon application in London, which would at once prove his practical experience of this system which he has throughout advocated. Under these circumstances, the undersigned can with confidence assure the honorable committee that there can be no possible doubt as to the result, and it will be possible to successfully carry out the necessary alterations during the interval between the end of the present Congress and the regular annual meeting of the next Congress.

For the more minute and particular explanation of his plan, the undersigned begs leave to submit the following drawings, viz:

Senate Wing.

- No. 1.—Plan of sub-basement floor, showing the alterations.
- No. 2.—Plan of basement floor, showing the alterations.
- No. 3.—Plan of the principal and upper floors, showing the alterations.
- No. 4.—Longitudinal section of wing, showing the alterations.
- No. 5.—Cross section of wing, showing the additions.
- No. 6.—Section showing the vertical air passage.
- No. 7.—Plan of air ducts over the ceiling.
- No. 8.—Front elevation of north wing, showing the attic.

No. 9.—Drawing of Reigart's improved fan-wheel.

No. 10.—Drawings of Frink's patent reflector.

House of Representatives.

No. 11.—Plan of sub-basement floors, showing the alterations.

No. 12.—Plan of basement floor, showing the alterations.

No. 13.—Plan of principal and gallery floors, showing the alterations.

No. 14.—Longitudinal section, showing the additions.

No. 15.—Cross section, showing the alterations in roof.

No. 16.—Section showing the vertical air passage.

No. 17.—Plan of the air ducts over the ceiling.

No. 18.—Elevation of the south wing, showing the additions.

No. 19.—Estimate, &c., from competent parties.

All of which is most respectfully submitted by

CHAS. FRED. ANDERSON,

Architect and Civil Engineer, Washington, D. C.

December 5, 1864.

REPORT OF CAPTAIN MEIGS.

OFFICE OF THE EXTENSION OF U. S. CAPITOL,

Washington, May 19, 1853.

DEAR SIR: Having verbally, in my interview with the President and yourself, fully explained the proposed changes, with the aid of large drawings, showing the accommodation to be afforded, it is not necessary here to enter into detail. [*These were the drawings furnished by C. F. Anderson.*]

I will only repeat my own conviction, that the proposed change will secure a better room for speaking, and hearing, and better accommodations for the members and officers, and business of the House.

I have prepared some notes upon the application of the general principles of acoustics and ventilation, which have guided me in devising the plan which I propose.

They contain the views I expressed to you verbally, and which I propose to write out for submission to some gentlemen of eminent scientific reputation.

While I feel confident that I am correct, I shall be happy to be sustained by their approval if right, and will be much better satisfied to be corrected if wrong, than to be permitted to go on and fail in so important an undertaking.

The changes which I recommend in the plan of the south wing, in order to carry out the above views, are shown upon drawings which have already been explained to you.

I would like to have an opportunity to show them to the gentlemen to whom you will refer these notes.

To lay down general principles correctly is not sufficient security that the application of them will be judiciously made.

I am, sir, very respectfully, your obedient servant,

M. C. MEIGS,

Captain of Engineers in charge of Capitol Extension.

Hon. JEFFERSON DAVIS,

Secretary of War.

Extracts from "Notes on Acoustics and Ventilation with reference to the new Halls of Congress," by Captain Meigs, United States Corps of Engineers; May, 1853.

Experience shows that the human voice, under favorable circumstances, is capable of filling a larger space than was ever probably enclosed within the walls of a single room.

If sound be prevented from spreading, and losing itself in the air, either by pipe or an extensive flat surface, as a wall or still water, it may be conveyed to a greater distance.

A pure atmosphere being favorable to the speaker's health and strength, will give him greater power of voice and more endurance: thus indirectly improving the hearing by strengthening the source of sound, and also by enabling the hearer to give his attention for a longer period unfatigued.

The common mode of warming and ventilating public rooms is fatal to perfection of hearing.

One or several columns of intensely heated air are introduced through holes in the floor. Being much warmer than the air of the apartment, they immediately rise to the ceiling. If the exit apertures for foul air are above, this fresh and heated air above escapes, having done nothing for the apartment except to cause whirls and currents, such as we see in a column of smoke passing from a chimney on a calm day. The irregular refraction of sound through these currents of equal density tends greatly to produce confusion.

If the exits for foul air are below, the hot air accumulates at the top of the room, and, gradually displacing the cooler air, forces it out through the passages.

Professor Reid relates that he has found the air near the ceiling of a room at the boiling temperature while those on the floor were complaining of cold.

Here we have a strata of different densities and unequal refractive power, and hence confusion of sound.

As the warmer air must ascend to the top of the room, I propose to let it do so in a large trunk outside of the apartment, pass into a space above the ceiling, and thence, by numerous holes, find its way, as through a sieve, into the room.

By a steam driven fan, or other mechanical means, we can pump air, in any desired quantity, into any spot into which we choose to direct it.

I would drive all the air required for the supply of the room through a maze of hot-water pipes, raising the whole of it to the temperature desired—60° or 80°, as the case might be.

If the room be thirty feet in height, and it be desired to change all the air in it every fifteen minutes, enough air should be pumped in above to cause a general descent of the whole body of air in the room, at the rate of two feet a minute.

This would be an imperceptible current. The exit should be by numerous holes in the floor, perhaps through the carpet, or the risers of the platforms on which are the members' chairs.

Three important advantages would thus be gained: The avoidance of all eddies, a nearly homogeneous and tranquil atmosphere, and the immediate removal downwards of any dust from the carpet, which would thus be prevented from rising, to be inhaled into the lungs.

To prevent the disturbance and contamination of the atmosphere by the gas-lights, I would place them above the glass of the skylights—the space between those in the ceiling and those in the roof being separated from the chamber into which the fresh air should be admitted.

In summer, the same apparatus which sends in warm air in winter would supply a constant breeze; and, if the temperature of the external air was too high, it might be cooled by jets of water from pipes in the passages, or even by melting ice.

I feel confident that, by observing the above prescribed precautions, we will obtain rooms as near perfection as is possible—"rooms in which no vitiated air shall injure the health of the legislators, and in which the voice from each member's desk shall be easily made audible in all parts of the room." [*This was Mr. Anderson's plan.*]

This was the problem proposed to me for solution.

In conclusion, I have the honor to repeat the request made verbally some days since, that the above notes and observations may be submitted to some persons of scientific reputation, the weight of whose authority may sustain me if I am right, or correct them if wrong.

Respectfully submitted to the honorable Jefferson Davis, Secretary of War, by his obedient servant,

M. C. MEIGS,

*Captain of Engineers, in charge of Extension of
United States Capitol and Washington Aqueduct.*

Subsequently, the subject having been referred to Professors Bache and Henry, those gentlemen addressed a communication to the Secretary of War as follows:

SIR: The undersigned have examined, as you requested, the principles proposed by Captain M. C. Meigs, of the Corps of Engineers, with reference to the acoustics, heating, and ventilation of the hall of Representatives.

They are now prepared to report that the principles presented to them by Captain Meigs are correct, and that they are judiciously applied.

They are of opinion that the plans should be provisionally adopted, in order that the building may not be delayed, subject to such modifications in the details as may result from the further study of them by Captain Meigs, or from the experiments and observations of the commission.

This general adaptation of the plans will not, it is believed, interfere with any changes of details likely to be found desirable.

Very respectfully, yours,

A. D. BACHE.
JOSEPH HENRY.

Hon. JEFFERSON DAVIS,
Secretary of War.

ESTIMATES.

Senate Chamber—abstract estimate.

Altering roof and raising ceiling, &c.	\$27,979 20
Scaffolding and machinery for all work.	10,000 00
Brick work in raising the chamber walls.	11,929 05
Air ducts over the ceiling, two thicknesses.	5,593 00
New windows round Senate chamber.	3,600 00
Belt course under the windows.	784 00
Gutters and eve cornice.	3,700 00
Remodelling flank roof and gutters.	5,000 00
Workmanship on attic walls and balustrade.	37,500 00
Mason's work in alterations air-shaft and tunnel.	20,000 00
New steam engine.	2,000 00
Two new fan-wheels.	3,000 00

Eight reflectors, fixing and pipes.....	\$9,600 00
Rearranging, rarefying steam pipes, &c.....	5,000 00
Lining upper air-chamber so as to make it water-proof, with hot and cold water pipes and sieve the entire length.....	5,000 00
	<hr/> 150,685 25 <hr/>

The above calculations are made at the present prices for labor and materials.

CHARLES F. ANDERSON,
Architect and Civil Engineer.

Hall of Representatives—abstract estimate.

Altering roof and raising the ceiling, &c., &c.....	\$38,970 10
Raising the brick walls round the hall.....	13,925 45
New windows round the hall.....	4,400 00
New belt course under windows.....	928 00
Air ducts over ceiling, two thicknesses.....	6,783 00
Gutters and eave cornice.....	4,500 00
Remodelling flank roof and gutters.....	6,000 00
Workmanship on attic wall and balustrade.....	37,500 00
Alterations in mason's work, air-shaft and tunnel.....	15,000 00
A new steam engine.....	2,000 00
Two new powerful fan-wheels.....	3,000 00
Thirteen reflectors, including fitting and pipes, &c.....	15,600 00
Rearranging, rarefying steam pipes, &c.....	3,000 00
Lining upper air-chamber so as to make it water-proof, with hot and cold water pipes and sieve.....	5,000 00
Scaffolding and machinery.....	10,000 000
	<hr/> \$166,606 55 <hr/>

The above calculations are made at the present prices for labor and materials.

CHARLES F. ANDERSON,
Architect and Civil Engineer.

Estimates and proposals for altering and raising the roofs and ceilings of the Senate chamber and hall of Representatives; the brick walls surrounding these apartments, and the windows within these walls; the large air-chambers with their water arrangements; the air-ducts over the ceilings, and the workmanship of covering the roofs complete; also all necessary scaffolding, and temporary roofing for protecting the interior of these chambers during the progress of the work; all to be done substantially, in a workmanlike manner, and completed in strict accordance with the plans and printed specifications prepared by C. F. Anderson, architect, and subject to his approval.

In altering these roofs, it is proposed to use the main ties in their present form, as these are known to be composed of excellent material, and to have been tested to the extent of ten thousand pounds strain to the square inch of cross section; but the rafters and braces will be altered, and made to conform to the improved roofs, and there will be seven-eighths added to the size of the rafters, so as to give to them a cross section of fifteen square inches—seven inches more than the old rafters have. This will make their strength *practically* equal to that of the ties with which they are connected, which is not the case with the old rafters; having only eight inches in cross section.

The engineer of the old roofs made a grave mistake in making the sizes of the ties and rafters nearly equal. He seems to have acted upon the theory that as the tensive strains in the ties, and the pressure in the rafters, are about equal in magnitude, and as it is known to require about equal magnitudes of positive and negative forces to crush wrought iron by pressure, and to tear it asunder by tension, that therefore the sizes of the rafters and the ties must also be equal to give to them corresponding strength. But he seems not to have considered the facts developed in practice, that rafters formed and acted upon as in these roofs, will fail by lateral deflection, under much less pressure than is required to crush the material of which they are composed, and that the corresponding amount of tension due to the ties cannot, by deflection, or distortion of any kind, impair their normal strength. Therefore, though *theoretically* right as to the magnitude of the forces acting in opposite directions in the rafters and in the ties, yet, in not providing for the difference in their effects, has resulted in *unscientific* construction, in roofs that have, practically, not more than half the strength that theory assigns to them. This error will be obviated in the proposed roofs by adding seven-eighths to the size of the rafters; while the ties remain unchanged.

For the purpose of ascertaining to what amount of strains the parts of the modified roofs may be subjected, and thereby determine the sizes and strength required for each part, I have made a computation of the weight of the roofs, with the ceilings, and such other parts as will be sustained by the roofs; and I find these to be equal to fifty-three pounds to each square foot of horizontal surface covered, to which I add ten pounds to the foot for possible loads of snow—total, sixty-three pounds to the foot. This is a large allowance for snow in this climate, and the high and open position of these roofs will preclude the possibility of drifts collecting upon them. The roofs, thus loaded, will produce tensive strains in the ties equal to 8,784½ pounds to the square inch of cross section, and 4,685 1-15 pounds pressure to the square inch in the rafters; which is only about one-seventh of the ultimate strength of good iron. The other parts will be similarly proportioned as to size of parts to the strains.

SENATE CHAMBER.

Altering roof, raising it, and the ceiling, as per plan.....	\$27, 979 20
Gutters and eave-cornice round the raised roof.....	3, 700 00
Brick walls around chamber, as per plan.....	11, 929 05
Scaffolding and temporary roofing so as to protect the old work.....	10, 000 00
Remodelling flank roofs and gutters, as per plan.....	5, 000 00
Lining upper air-chamber, so as to make it water-tight, with hot and cold water pipes, and sieves.....	5, 000 00
Air-ducts over ceiling, two thicknesses.....	5, 593 00
New windows around the chamber, as per plan.....	3, 600 00
Belt course under these windows, as per plan.....	784 00
Mason work in tunnel, and in new air-shaft.....	20, 000 00
Rearranging rarefying steam-pipes, &c., &c., &c.....	5, 000 00
Work on attic walls and balustrade.....	37, 500 00
	<hr/>
	136, 085 25
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I will execute this work, as above set forth, for the sum of one hundred and thirty-six thousand eighty-five dollars and twenty-five cents, (\$136,085 25,) and will give ample security for the due performance thereof.

BENJAMIN SEVERSON, 359 E street.

WASHINGTON, December 2, 1864.

HALL OF REPRESENTATIVES.

Altering roof, raising it and the ceiling	\$38, 970 10
Gutters and eave-cornice round the raised roof	4, 500 00
Brick wall around the hall, as per plan	13, 925 45
Scaffolding and temporary roofing for protection	10, 000 00
Remodelling flank roof and gutters, as per plan	6, 000 00
Lining upper air-chamber so as to make it water-tight, with hot and cold water pipes, and sieves	5, 000 00
Air-ducts over ceiling, two thicknesses	6, 783 00
New windows around the hall, as per section	4, 400 00
Belt course under these windows, as per section	928 00
Mason work in tunnel, and air-shafts, also alterations	15, 000 00
Rearranging rarefying steam-pipes, &c., &c., &c.	3, 000 00
Work on attic walls and balustrade	37, 500 00
	<hr/>
	146, 006 55
	<hr/>

I will execute this work as above set forth for the sum of one hundred and forty-six thousand and six dollars and fifty-five cents, (\$146, 006 55,) and will give ample security for the due performance thereof.

BENJAMIN SEVERSON, 359 *E street*.

WASHINGTON, *December 2, 1864.*

NOTE.—While these pages are going through the press, the attention of the committee is directed to an elaborate report upon ventilation by Messrs. Shedd and Edson, civil engineers, to a committee of the Massachusetts house of representatives, dated January 1, 1865. Copious extracts from this valuable paper are given in the succeeding pages, upon the questions of moisture in the air and the downward movement in ventilation. The views presented by this committee in the foregoing report receive, in those extracts, an intelligent and weighty endorsement. The actual and successful application of the downward movement by General Morin in the Hall of the Conservatory of Arts and Trades, and by Mr. Gurney in the Houses of Parliament, and in court-houses and other public buildings in England, must be regarded as satisfactory and decisive in favor of the conclusion to which the committee have arrived. In fact, the current of authority at this time, as well as sound reason, is for the proposed plan.

Extracts from the report on ventilation of J. Herbert Shedd and William Edson, esquires, civil engineers, made to a committee of the Massachusetts House of Representatives, Boston, January 1, 1865.

MOISTURE IN AIR.

Scientific and medical authorities generally concur in the opinion that in-door air, after heating, should contain nearly the same proportion of moisture as the average of out-door air of the same temperature; but when air is brought in from out of doors at the temperature of zero, and raised by heaters to sixty-eight degrees, it would require the addition of $4\frac{3}{1000}$ grains of water per cubic foot of air to bring it up to the required degree of moisture. For the proper moistening then of fresh warmed air introduced at the rate of twenty cubic feet a minute for each one of three hundred persons two hours, the air taken at zero and at the average degree of moisture, no less than fifty-nine gallons of water would require to be added.

Exactly how much vapor, or what per cent. of moisture, is the most healthy, has not yet been determined. From much observation, we have taken sixty-five per cent. of saturation as the amount most likely to prove healthy.

The mean relative humidity of the air at Philadelphia for the year 1863 was 67.2, and the mean annual average for twelve years, 68.5.

THE DOWNWARD MOVEMENT.

The essential point of ventilation is constant change of air, the removal of the air that becomes laden with the secretions of the body, and its replacement by fresh air. In nature this change is generally effected by currents of wind that rapidly sweep away and renew the air. In addition, according as the air is cooler than the body, the portion coming in contact with the person is warmed, and, becoming lighter than the rest, has a tendency to rise and give place to new air. This tendency is shown by a sensitive wind-wheel, in low temperatures, at the distance of a few inches from the body.

The heat of the breath also has been assumed to be the special provision for its removal and replacement with fresh air. This has been a favorite theory even among scientific men. Mr. Gurney was one of the first to stoutly deny the fact; in his testimony before committees of Parliament in 1854, he asserted that the downward propulsion which the breath received by the position and direction of the nostrils did not cease, so far as the impurities with which it is laden are concerned, till it deposited them on the ground. We have not been able to verify Mr. Gurney's assertion, that on a frosty day the vapor from a person's mouth may be seen to describe a parabolic curve to the ground; but any one may see the vapor of the breath driven from the nostrils taking at first a downward course. A breath of fair strength, with the thermometer near the freezing point, may be seen by its condensed vapor, driven downward and slightly outwards, for a foot or more. The subjoined sketch is an accurate representation of the visible breath seen in air of twenty-six degrees Fahrenheit, the rate of breathing being twenty-one to twenty-two times a minute. [The figures omitted.]

In this observation, the wind-wheel moved rapidly near the body, and steadily at a distance of six inches in front, and also at two feet above the head. Notwithstanding this upward current, the breath was strongly marked by the condensed moisture, fourteen inches below the nostrils, and would doubtless have been seen further down but for the dissipation of the moisture. In a room with the air at sixty-five degrees, the same wind-wheel was in motion close to the vital parts of the body, but stopped entirely at two or three inches distance from the body, or above the head. This was to be anticipated, because the

force that carries the wheel is the rising of the air in consequence of its greater heat and lightness than that of the surrounding air, and is proportioned to the difference of temperature.

In order to determine the amount of heat operating to cause the air to rise, a thermometer was placed within the clothing near the vital parts of the body, where it was found to stand at eighty-two degrees, while the person remained in air at sixty-five; on going into air at twenty degrees, with additional clothing, the thermometer stood at seventy-six degrees. The air around the body in a warm room, therefore, would rise with a force not far from seventeen degrees, while in outer air at twenty degrees it would rise with a force not far from fifty-six degrees. In point of fact we suppose the air would rise with a velocity somewhat less than these figures, but, relatively, we think they are nearly correct. A more sensitive instrument would have been affected at a greater distance, but the same wheel showed a distinct downward motion of the breath fifteen inches below the nostrils, in opposition to all the rising tendency, by reason of the warmth of the breath, and of the air about the body; and this motion also would have been shown to a greater distance by a more sensitive wheel.

Let us now suppose, to be well within bounds, the breath to be moved twelve inches below the face. The downward motion having ceased, the upward motion should then begin which is to carry the breath up out of the way. This old breath has about one second in which to rise, from rest or reverse motion, more than twelve inches, in order to be out of the way at the next inhalation. The difference of temperature necessary to give the breath this movement of twelve inches in the first second, if the breath rises by heat alone, will surprise any one not familiar with such calculations. It is not less than one hundred and eighty degrees; that is to say, the breath, in order to start from rest and rise twelve inches in one second through air at sixty-five degrees, would have to be at a temperature of two hundred and forty-five degrees.

The absurdity to which this calculation and experiment reduce the idea that our breath is carried away from the face by its upward tendency from heat, is increased by the observation, which every one may make, that a thermometer at sixty-five degrees cannot be raised more than one degree by breathing upon it at nine inches distance, and that at ten inches no effect can be perceived. But the upward tendency of the breath is doubtless much increased from the diffusion and lightness of its aqueous vapor, and possibly from other causes, though, under the most favorable circumstances, all causes combined are not sufficient to carry the expired breath up out of the way before another inhalation, as may be seen on a frosty day; and it is evident to all that the air contaminated by the body, if carried upward, must in some measure be inhaled.

The fact, then, in regard to the removal of the expired air from the face is rather the reverse of the theory that it is carried upward out of the way. It is carried downward at ordinary temperatures with force, as of a steam-jet, that, for aught we know, deposits it with its impurities, as Mr. Gurney says, at the floor. Though we have not traced its descent more than a third of the distance, a calculation of its downward impulse shows it to be sufficient to overcome all the upward tendency of its own heat, and that of the air about the body to a considerably greater distance than that of the floor. The supply of fresh air for inhalation comes in from above and about the face, to supply the partial vacuum created by the downward jet; and in this jet, as Mr. Gurney has pointed out, not in the upward tendency of the warm breath, is the admirable provision of nature for carrying away the expelled air before more is to be inhaled.

We are not, however, to conclude that the rising force imparted to the air about a person, by heat of skin and lungs, is absolutely nothing, although in warm rooms it is practically of small account. More heat is given off from the

body by radiation than by contact of air. Enclose a person in a non-conducting cylinder not much above his size, and the accumulation of heat about him would give some force to the air. And so, in an assembly, the heat accumulated around and among the persons gives the air a certain amount of rising force. Taking for a basis Péclet's estimate of the amount of heat given off by an individual in moderate temperature, the upward force given to air by three hundred persons in an hour would be equal to the power of five pounds of coal. This is an extreme outside calculation of the force of the heat imparted by the body. If the usual deductions should be made for the wasteful manner of this application of heat to raise the air, less than half this amount of coal would be seen to balance the elevating effect on the air of three hundred persons.

Yet, on the assumption of an effective lifting power in the heat given off from the body has been based the prevailing system of ventilation—that is, of taking the fresh air in at the bottom of the room and the foul air out at the top. This is claimed to be the natural system, and, therefore, the cheapest and best. The claim is admissible in cases where no power exists to change the air except this slight difference of temperature; but what becomes of it in cases where tons of coal are burnt a day for the sole purpose of producing a power to move the air, and where, as is common, all the air taken out at the top is brought down again in pipes to the ground before being sent off through a chimney shaft? Is it not more natural, cheaper, and better to go on as nature begins, and take the foul air of breath and body directly down through the floor to its exhausting chimney?

These two theories of ventilation have been often argued and both practiced with varying success. We will consider the circumstances of a large hall of assembly, and show the operation of the two systems.

We must suppose a floor well packed with people, at the bottom of a cubical or hemispherical hall; suppose them to have entered at once, the hall being previously filled with pure air; directly the whole lower stratum of air, in which the audience are, is contaminated by their exhalations and emanations. Now, the problem is to get that stratum of air out of the hall before any of it can come to use again, and to replace it with fresh air of the right temperature. It is obvious that it cannot be taken out sideways, because then many would have to breathe over again the breath of others. It can be taken only either up or down. If it is taken up, the fresh air that is to supply its place must enter at the floor from which the foul air rises, for no air will leave a spot till other air is ready to fill its place. In order, then, to lift the whole of the foul air bodily from the floor, it is necessary that the whole floor should be open for the admission of fresh air. Wherever there is a piece of solid floor through which the air cannot pass, there will be a dead space of foul air above it, which will not rise with the rest, but will remain to be gradually mixed with the fresh air entering around it. If the dead space is considerable, the whole amount of air required must enter in the limited space of the openings, and the velocity must be proportionately increased. According as this space is reduced and the velocity increased, the air entering has a force that carries it up beyond the place where it is to be used, and mixes it with the foul air passing off; a part of which mixture will return in counter-currents and gradually replace the air in the dead spaces. The operation may be seen by a simple experiment.

Take a bucket-full of turbid water and lower it into a tub of clear water of equal temperature and density. If the bottom of the bucket could be removed without disturbance, the sides might be lowered gently and the clear water would replace the turbid water in the bucket completely, without much mixing. So, too, if the bottom of the bucket is entirely perforated, leaving very slender partitions between the perforations, the clear water may replace the turbid with little disturbance and mixing. But if the perforations are limited to holes of, say, half the space in the bottom, on pushing down the bucket the clear water

will rush up into the midst of the turbid water, and the turbid water on the solid spaces of the bottom will remain, till, mixed by friction and counter-currents with the pure water, it is gradually carried up. The fewer and smaller the holes the longer the turbid water will remain in the dead spaces; and, if its turbidness is from a constant source, it will be likely to increase rather than diminish.

Dr. Reid, the most scientific and experienced, perhaps, of the advocates of the upward system, seeing this necessity for introducing his fresh air through the whole extent of the floor, when, after experience in the temporary houses of Parliament, he was called upon to arrange the ventilation of the new House of Commons in Westminster Palace, had the entire floor made of perforated iron. This was afterwards covered with haircloth carpeting, and through nearly its whole extent the fresh air was admitted. No expense was spared, and the system was tried for some years under the most favorable circumstances. The result was, that, on account of the raising of dust by the entering air, and still more on account of the uncomfortable draughts brought up against the honorable members' legs, nine-tenths of the floor came to be covered with sheet lead under the carpet. And when the entrance for fresh air was thus limited, it being through the carpet but a fraction of the nominal extent, complaints became so loud both of strong currents and of foulness of air, that the whole matter of ventilation was turned over to Mr. Goldsworthy Gurney, who undertook it on the opposite system of introducing the fresh air above and taking out the foul air at the floor.

In the French senate chamber, formerly supplied with fresh air through the rising steps behind the members' seats, these openings were closed because of the draughts about the senators' legs, and, according to Morin, in 1862 they had no ventilation at all.

Such are some of the difficulties of changing the air of a crowded hall by introducing it at the bottom and taking it out at the top. To avoid them, Sir Charles Barry, the architect of the new houses of Parliament, introduced his main supply of fresh air in the House of Lords through the middle compartment of the ceiling, expecting it to descend to the floor, then to rise at the sides, and to be taken out in the side compartments of the ceiling. This was expecting too much of atmospheric nature, and, after a few years' trial, this hall, too, was given over to Mr. Gurney, who proposed to take the air out at the floor. We shall not dwell on the system of taking both the fresh air in and the foul air out at the top, or on that of taking the fresh air in and the foul air out at the bottom, because these systems, to be equally effectual, must double the amount of current that would be caused by taking the air in one way and out the other, and are for that reason not to be recommended for large halls, where the great difficulty is to change the air fast enough without making unpleasant currents.

Introducing the air at the upper part of a hall, and taking it out at the bottom, known as downward ventilation, has certain obvious advantages: 1. It takes the emanations of the skin and lungs out of the room immediately after they are given off, before they have a chance to be inhaled. 2. Consequently, the fresh air coming unimpaired directly to the heads of the audience, a much less supply is required to secure the freshness of what is inhaled than is necessary when the new air is brought first to the feet, or becomes mixed with foul currents. 3. The warm air introduced has the opportunity of spending something of its heat on the ceiling and walls before it comes to be breathed, instead of being breathed at its highest temperature. 4. The fresh air is diffused over the whole area of the hall, even if introduced through few apertures, before reaching the audience; by which means the air is brought upon them more gently than if it came directly upon them through limited apertures. The greater the number and area of apertures for the exit of the foul air at the

floor, the better, and the less will the current be felt. But this current, being downwards, will always be felt in a much less degree than a similar current upwards about the legs, for obvious reasons; and the dust and odors of the floor will be carried down, instead of up into the air to be breathed.

For illustration of downward ventilation, take, as before, a bucket of water, turbid near the bottom, and sink it in a tub of clear water. Suppose the bottom to be well perforated, or even but partially so, clear water coming in at the top, as the bucket is raised, will force out the turbid water very effectually at the bottom, whatever may be the position of the openings at the top. In other words, air passing through a room will drive out more thoroughly and uniformly the air at the side at which it goes out than that at the side it enters.

The gain effected by bringing the fresh air to the face, to be breathed before it sweeps the body, is quite important. It may be estimated by considering how much less supply of fresh air would be sufficient for a man enclosed in a cylinder just large enough to hold him, in case the air came down to his head first, than in case it came to his feet first, and up by his body to the face. A crowded assembly may be considered as a set of such cylinders, closely packed together, with their occupants like bees in their cells. The great advantage, in point of economy of freshness, of sending the air downwards, instead of upwards, is here very apparent; and it is obvious that in the one case may be obtained perfect purity of the air, while in the other it can never be more than an approximation.

The heating of the walls, ceiling, floor, and furniture of a hall is of great importance. Otherwise, very hot air will not suffice to keep the occupants comfortable. If, as in most cases, this heating is to be done by the warm air alone, the more there is accomplished before the air is breathed, the less will be the comparative heat of the air entering the lungs.

This we consider, in itself, a decided advantage, and it is obtained in greater degree when the warm air is introduced above than when it enters at many points through the floor.

When the air is introduced at the top of a hall and drawn out at the bottom, it is rapidly diffused through the whole upper space, and then begins to descend slowly and very uniformly to the floor. This is the case even at present in our representatives hall, where the warm air enters at a single opening above the Speaker's chair. This air rises at once into the dome of the hall, as seen by experimental balloons, where it is quickly diffused, and then descends almost vertically in all parts of the hall to the floor. This arrangement, though designed only as a temporary and experimental step to the still better plan of introducing the air directly into the dome, proves, in a degree, that much greater gentleness and uniformity of motion, with freedom from needless currents, may be obtained with downward ventilation than it is possible to have with upward ventilation. For, in the latter, the rising air can occupy but very much less space, must have, at the level of the audience, proportionally greater velocity, and must alternate with additional counter-currents.

The objections to the downward system are: 1. Its supposed antagonism to the natural laws of upward movement of heated air. 2. The supposed greater heat of the upper air in the hall under that system.

The first objection we have already sufficiently considered. Practically, even those who favor upward ventilation admit that there is no difficulty in taking the foul air out at the bottom by the application of a moderate force; and nothing in the art of ventilation is more universally admitted than the necessity, under any form of ventilation, in all public buildings, for the employment of some special power.

Nor is the objection strengthened materially by the common impression of greater foulness at the top than at the bottom of a crowded room. There is some truth in this impression, in regard to rooms which have no ventilation, though

most careful experiments by eminent chemists fail to show any considerable or uniform increase in carbonic acid in the upper part of crowded halls; perhaps as many experiments have shown the greater amount at the bottom as have shown it at the top. What slight increase there may sometimes be at the hottest state, is probably more than lost as the heated carbonic acid cools, and, to some extent, sinks from its weight. Sensitive observers, too, have found that though the upper portion of a heated, ill-ventilated hall smells most offensively, and, from its heat, is oppressive, the lower portion most seriously affects their state of health. In our representatives hall, there has been the most serious complaint of oppression on the lowest portion of the floor, around the Speaker's desk. In point of fact, we believe, the idea of the greater foulness of air at the top arises mainly from crowded evening assemblies, where the heated products of combustion from gas-lights contaminate the upper air to a great extent.

It is of the utmost consequence that these products should have some direct means of removal. This is provided for in the best ventilated halls by so disposing the gas-burners that they may have direct and independent outlets for their smoke and gas. Another obvious explanation of the frequent greater impurity of the upper air in crowded, ill-ventilated halls, is that, without special force of supply, there is always a rush of fresh air into the hall through the doors as they are frequently opened; this air being cooler, of course, forces the warm foul air upwards. After all, the greater heat at the top of the room is probably the chief cause of the impression of greater foulness, though with the heat may be associated some light odorous gases. But all this is of no importance against systematic downward ventilation. When the foul air is taken off at the bottom, it is no longer found in excess at the top.

Morin's very accurate experiments in the smaller hall of the Conservatory of Arts and Trades, ventilated from above downward, show, on the average, a scarcely perceptible difference between the temperature of the air above and that below. In our own representatives' hall, where now the warm air is introduced thirteen feet above the Speaker's platform, and the foul air taken out at the floor, though the arrangements for supply and exhaust are, at present, quite limited and much less than we should desire, we have found as the average of over five hundred observations in eighty-six different positions, with the exhaust ducts open, the temperature opposite the gas-burners above the gallery only about two and one-half degrees above the average throughout the hall; while that of the lower seats was not two and one-half degrees below the average. When, however, in the midst of these observations, the exhaust ducts were temporarily closed, the difference soon doubled, though the whole average temperature was slightly lowered.

To give these results more in detail:

Observations in level planes.	VENTILATING DUCTS.	
	Open.	Closed.
Average in dome of hall	78.5°	85°
Average opposite gas-lights above gallery	71.46°	73.54°
Average opposite gas-lights below gallery	68.57°	66.50°
Average in the seats	66.63°	63.72°
Average throughout the hall	68.86°	68.17°

It is essential to the system of downward ventilation, as well as to all other systems, that a constant current should be maintained by keeping the inlet and outlet always open. When less heat is desired, the change must be effected, not by stopping the warm-air inlet, but by letting into it cooler air. And when the heat of the room goes off too fast, especially when it is empty, the heat

may be economized by letting the air at the floor back into the heating chamber instead of out of doors.

In support of the downward system, we will only refer to Mr. Goldsworthy Gurney's testimony before the committees of both houses of Parliament, who has for the last ten years had charge of the ventilation of the houses of Parliament, and who has introduced the downward system with great success, in court-houses and other public buildings, in England; to the book of Mr. Rutan, of Canada, who has introduced the system most successfully in railway cars, on some of our roads, as well as in buildings; and to the conclusions of General Morin, well known for his valuable scientific works on different departments of engineering, and the author of the latest and most elaborate work on ventilation, (*Etudes sur la Ventilation*, Paris, 1863, 2 vols. 8vo, pp. 1017.)

General Morin says, in treating of the ventilation of large halls:

"The numerous observations which I have gathered, and which any one may repeat, have shown me, as I have already said, that there are very sensible inconveniences in making the new air, warm or cold, enter near the occupants of a hall.

"This air is always necessarily at a temperature different from that of the hall; warmer, if it is desired to raise or even sometimes to maintain the inside temperature, as is the case in winter, to compensate the cooling effect of the walls, and when there are few present; and, on the other hand, cooler, if the outer temperature is somewhat high, and if there are many occupants.

"In the one case, as in the other, the neighborhood of the apertures for the entrance of air is disagreeable, and, whatever care is taken to limit the velocity by giving the apertures the greatest possible extent, it is seldom that the velocity can be less than 1.3 to 1.7 feet per second, from which there is sometimes an uncomfortable sensation."

After referring to the experience in the English House of Commons, and to that in the French senate chamber, in both of which the apertures for the admission of air had been gradually closed, because of the objectionable currents, till ventilation had almost ceased, General Morin continues:

"It does not seem to me, then, suitable for amphitheatres, or for any other place of a similar kind, to admit the new air through the floor, by the steps or the step-risers. On the contrary, here as elsewhere, the air should be made to enter as far as possible from the audience; and as it may be often necessary the same day, and from time to time, to vary the temperature of the air admitted, within certain limits, arrangements must be adopted which will render the mixing of warm and cold air as complete and as easy to modify as possible, before it comes in contact with the audience. This, it must be said, is the most delicate condition to well fulfil, and amphitheatres are, perhaps, the case in which the difficulty is presented in the highest degree.

"After having reflected much and observed well the various effects of the introduction and evacuation of the air, this is the solution which has seemed to me the surest, and which I have settled upon for the amphitheatres of the Conservatory of Arts and Trades. It has already been applied to one of them as completely as the local conditions would permit in a building of old construction. The vitiated air being that which it is necessary to draw out, it is desirable to hinder it from diffusing in the hall, and consequently to extract it at the spot where it is vitiated, that is to say, as near as possible to the individual occupants, through perforations, in the risers, or backs of the steps, in order to make it pass out under the amphitheatre.

"The introduction of fresh air presents two principal phases, quite distinct. In the first, which precedes the arrival of the people, the amphitheatre should be brought up to a moderate temperature, which may, however, be raised to 64.4°. At this moment it is evident that the movement of air from inside to outside of the hall should be, in general, completely interrupted; and in order

that there may be established throughout the hall a suitable temperature, it seems natural to allow the warm air to be introduced then by passages communicating with the heaters and opening through the floor at the lowest points.

"In the second period, on the contrary, soon after the entrance of the audience, and according to their number, more or less, we must extract a portion of the air now vitiated and more or less heated, and replace it with pure air. But this fresh air would be, as is daily observed, very uncomfortable if its temperature were much lower than that of the air of the hall, and especially if it flowed in too near the audience.

"From this results: 1. The necessity of introducing the fresh air first into a receiver, which we call the mixing chamber, where, by the simultaneous entrance of hot air and cool air, in proportions which can be easily regulated, the means are kept of admitting into the hall only air of the desired temperature. 2. The obligation, not less imperative, to place the openings for the admission of this fresh air as far as possible from the audience, that is to say, about the ceiling of the amphitheatre, if the circumstances of the place permit, or at least at a considerable height. In general, whenever the construction will permit, it is preferable to bring the fresh air through the ceiling or the cornice by openings so proportioned that the mean velocity of the air will not exceed 1.3 to 1.7 feet per second."

The general rules adopted by Morin are as follows:

"1. Place the exhaust orifices as near the points where the air is vitiated as possible.

"2. Have as many orifices of exhaustion as the construction of the building will admit of.

"3. Orifices of exhaustion should be so proportioned that the velocity of air passing through them may be from 2.6 to 3.3 feet per second.

"4. Unite the different groups only by entering them into the common conduit, or into the chimney of exhaust, and as far as possible from their openings into the rooms. Arrange in such a manner that they can be easily examined and repaired. Protect from cold.

"Do not place the orifices for the entrance of fresh air near the floor; it is proved, in the French Senate, that where the orifices were near the floor, currents of warm air, having a velocity of from one and three-tenths to one and seven-tenths feet per second, were disagreeable; currents of cold air should be avoided for much stronger reasons.

"The above is agreeable to the conclusions of both French and English engineers."

The whole discussion of the matter of ventilation before committees of Parliament for twenty years, ending some ten years ago, is full of interest and instruction; through it all Mr. Gurney appears in behalf of downward ventilation, in opposition to Dr. Reid, who, for that time, was attempting to ventilate the houses of Parliament satisfactorily on the upward system. When, in 1854-5, the committees of both houses determined to give their ventilation into the hands of Mr. Gurney, they seem to have adopted the conclusion of Mr. Robert Stephenson, who, himself a member, was examined by a committee of the House of Commons in 1852, and testified that for a crowded hall he preferred downward ventilation, unless the gas-lights should interfere; and that it was as easy to draw the air out downward as upward.

Dr. Morrill Wyman, whose little treatise on ventilation contains more scientific and sensible information on the subject than almost any other book in the English language, though he gives assent to the prevailing theory of upward ventilation, says:

"There is no impossibility, however, of producing a constant and equable downward movement, which shall also effectually prevent all respired air from being again presented to the organs of respiration. The first movement of expired air

is from the mouth, horizontally, and from the nostrils, downward, before it begins to rise; consequently, a downward current may, without much difficulty, be brought to bear upon and remove it."

As regards the manner of applying power to effect the change of air, it is sometimes applied to the exhaustion of the foul air, and sometimes to the supply of fresh air. Either way is effectual in a degree, but neither alone accomplishes quite all that is to be desired. Forcing the fresh air in abundantly will drive out the air already in the hall at every outlet, and it is essential for security against the intrusion of cold currents through cracks and doorways. But it will drive the air out mainly at the easiest outlets, and some of the most important may be neglected, because of being out of the easiest way for the air to pass. The only sure way to get the air out just where you want it to go out is to apply an exhausting force at the outlets, to guide and assist the expelling force. The filling method is called the plenum method, and the exhausting the vacuum method. Much has been said about the superiority, for working vigor, of air in a plenum, or over-pressure condition. There is no doubt of the fact that under a high atmospheric pressure a man has greater power than under a low pressure. But the amount of superior pressure that can be obtained in a common hall is very slight, and can hardly have a perceptible effect. A nearly even balance of the filling and exhausting forces, making the in-door barometer about the same as the out-door, but with the filling force enough in excess to keep out all air seeking to enter without leave, is the most economical and satisfactory condition to obtain.

EVIDENCE.

WEDNESDAY, *January 25, 1865.*

Committee met at 7 o'clock p. m.

Present :

Mr. BUCKALEW, chairman,

Mr. HOWARD,

Mr. PIKE.

Dr. THOMAS ANTISELL called and examined.

By the chairman :

Question. State whether you have examined the plans of Mr. Anderson which are before the committee.

Answer. I have examined his plans, and I have also read his paper explanatory of them.

Question. I will ask you in reference to shafts outside the building, say thirty feet high, for obtaining the air in the first instance; whether that plan is eligible, and what would be its advantages over the present system of obtaining air from the level of the terrace?

Answer. I do not think a shaft of that height is necessary, because this building is placed so far above the average surface-level of the country as to relieve the air from the effect of immediate contact with the ground. The air lying immediately on the ground without motion is cool for three or four feet, and therefore a shaft three or four feet high would be all that is needed. A high shaft is objectionable in consequence of increasing the friction caused by the air passing through it; of course requiring increased power to overcome the friction.

Question. Would there not be an advantage in shafts of some elevation in order to avoid the dust and dirt?

Answer. I think not. You would have to go higher than twenty-five or thirty feet to give any considerable protection against dust.

Question. Then the degree of effect produced in that regard would depend upon the height, would it not?

Answer. The height of twenty-five or thirty feet would not produce much difference in respect to dust. We should not take air from the immediate contact with the ground, which is cold, but three or four feet elevation would obviate that difficulty.

Question. Would there not be some impurities contained in the air within three or five feet of the ground that it would not contain twenty-five or thirty feet above?

Answer. I do not think there would be any material difference.

Question. I understand you to speak with reference to the particular location of the Capitol?

Answer. I am speaking with reference to this particular point or place.

Question. That you are not pronouncing a general judgment, but applying your opinion to this particular case?

Answer. Yes, sir.

Question. With regard to the second point in these plans, of providing a jet or jets of water near the entrance where the air is drawn into the building, the jet projecting into the current of air, is that, in your judgment, an idea of utility and value, or not?

Answer. That, I believe, is no part of the original plan. It would remove any existing carbonic acid that might exist in the external air, but would not, I think, remove any solid bodies the air might contain.

Question. In reference to the power proposed for propelling the air toward the halls, Mr. Anderson suggests the erection of a fan for that purpose; I desire to know whether, in your opinion, that is a proper instrument?

Answer. It is the most effective, but not the most economical. The chief power should be placed at the point where the air is thrown out or removed from the building. I look upon the first fan as of secondary importance, compared with the fan which is placed at the point where the air is removed. The object is, to remove the air that has become impure; and it may be done much easier and with more certainty if the power is applied at the removing point.

Question. Would a fan be the proper means, in your opinion, of accomplishing that object?

Answer. I think it is the most effective power for a building of this magnitude. There are other kinds of power sometimes used; such as the aspirating power, applied by means of fires in chimnies, causing the expansion of the air, and the ordinary mode of doors and windows, which is impracticable in the present arrangement of this building.

Question. Then the question is between fans and chimnies?

Answer. Yes, sir.

Question. In admitting the air into the chamber above or below, what is your opinion of its admission by diffusion through numerous openings?

Answer. That would be a necessity; otherwise, in admitting the amount of air required for these large rooms, a terrible current would be created. It is necessary that it should be distributed.

Question. In short, its distribution at the time of entering the room is necessary for successful ventilation?

Answer. Yes, sir; the amount of air required for a single person in a public room is a thousand feet an hour; and the introduction, in a single current, of the air required for one of the chambers in this building, would produce a perfect whirlwind.

Question. With regard to the mode of exhausting the air or removing it from

the halls, do you speak of the fan as the most efficient power for accomplishing that purpose?

Answer. Yes, sir; it is the most effective.

Question. What is the effect upon the character of the air of taking it, as we do at present, at a temperature of 30° , passing it through a closed dry space, heating it to the temperature of 75° ?

Answer. By increasing the heat 45° the air is expanded forty-five four hundred and eightieths, or one-twelfth of its bulk. The result of that expansion is, that the same quantity of water which was in a cubic foot originally is now in a cubic foot and a twelfth. The moisture is therefore relatively diminished, and the air becomes drier. The fact that air becomes drier in the process of expansion constitutes one of the great difficulties in ventilation.

Question. Is not the air very much changed in reference to the moisture it contains, by this process, from the condition of the external air at the same temperature?

Answer. The quantity of water in the external air depends upon the temperature, and upon nothing else. There is a certain amount of water in a cubic foot of air at a temperature of 75° ; being a little more than four times as much as is contained in a cubic foot of air at 32° .

Question. Is it necessary then, in cases like that of our building, in order to secure the proper condition of air in the chamber, to hydrate it?

Answer. It is.

Question. How, in your judgment, can the hydration of the air passing into these chambers be accomplished most efficiently and conveniently?

Answer. It may be heated most readily by passing it against furnaces of red hot plates; but that burns the air, and it is objectionable on account of the odor. It may also be heated by passing it over hot water or steam pipes.

Question by Mr. Howard:

What do you mean by *burning* the air?

Answer. I mean that as the air ordinarily exists it contains microscopic forms of animal and vegetable life; these are burnt when thrown upon the surface of red-hot plates, and the air is thereby injured.

Question by the chairman:

I wish to call your attention particularly to the most convenient and efficient mode of imparting moisture, artificially, in our arrangements here.

Answer. I think that sprays of water, at the ordinary temperature, or slightly increased, thrown at right angles to the currents of air would be the most effective mode. If thrown directly against the current it would too much impede its force, and require too great power to overcome it. Passing it at right angles is the natural mode by which the air is moistened. Many a shower falls above which never reaches the ground, thus showing that sprays of water are absorbed by the air.

Question. Will you state whether admitting the air to a chamber by diffusion through the floor is not liable to the objection that a considerable amount of dust and solid matter is carried up into the atmosphere of the room?

Answer. Certainly; the current of air carried upwards through the floor would take with it the dust upon the carpet or floor with which it came in contact, and for that reason that locality for admitting the air has been given up in nearly all large buildings. It is generally admitted from the sides, near the floor, but not through the floor.

Question. Do you consider the application of power for the removal of air from a chamber more important than for its introduction?

Answer. Certainly; that is the main point. The main power should be applied where the air is to be removed, and for this reason: you are never sure in

driving air in, that it arrives at the point desired; but if you take it out of the room the thing is palpable.

Question. In a room occupied by a large audience, sitting for several hours, is there not a very large amount of carbonic acid gas generated?

Answer. A very large amount. The extent to which the air is affected by it, however, depends upon the closeness of the room.

Question. At what temperature would that be thrown into the atmosphere from the lungs?

Answer. At very nearly 90° , sometimes at 85° in the winter time.

Question. In other words, it would exceed the temperature of the air in the room on ordinary occasions?

Answer. It always does.

Question. And the result would be that that gas would ascend in the room?

Answer. Yes, sir.

Question. Assuming that it would come in contact with a comparatively cool surface, such as the sides of the room, or windows, or glass roof, what would be the effect upon the gas?

Answer. Its temperature would be lowered to that of the surrounding air, and it would pass up or down, as the case might be, with the currents of air in the room.

Question. When of the same temperature as the air, is not this gas heavier than air?

Answer. Two and a half times heavier, when pure. That thrown off from the lungs, however, not being pure carbonic acid, is not so heavy as that.

Question. I understand you that carbonic acid gas, upon coming in contact with a cold surface on ascending, is liable to be thrown into the air, to be again breathed?

Answer. Certainly; it is very liable to the power of diffusion.

Question. Is not that one of the reasons why an efficient mode of removing the air from the room by a power appropriate to the purpose is necessary?

Answer. In all rooms there is a necessity for force to remove the air, because air has a tendency of itself to remain still. Even while resting upon the ground it will not move unless there is a wind to force it. It is absolutely necessary that it should be removed by force.

Question. Have you reflected upon the subject of the effect of this large area of glass roof over the two chambers of Congress upon the ventilation of the chambers; the air and gases being admitted to immediate contact with the roof through perforations in the ceiling; what would be the effect of bringing it in contact with the roof at this cold season of the year?

Answer. When a glass roof to a building is made use of, it must be for the purpose of admission of solar light, and as this agent is always accompanied by heat, these two agents always are introduced together, and it is because they are so introduced that this plan is adopted by horticulturalists. A glass roof converts a building into a green-house and destroys the advantage of a roof, whose design, in domestic structures, is to be a defence against the alternations of season and changes of temperature. Glass is especially pervious to the rays of solar heat, and hence in summer time admits a great amount of heat. If the air space be in direct communication with the air in the rooms below, the whole air will of course be heated up much higher, and if the air drawn in had been previously cooled it would heat it again. If the vitiated air had to pass through such air space, it would become so heated and expanded that its current outward would be impeded, and deficient ventilation be the result.

In winter time a glass roof would admit only light, and it would, to some extent, diminish the temperature of the air in the air space, and if the ventilation were to be carried on by the plan now proposed by Mr. Anderson, such material for the roof would be objectionable as being a greater cooling agent than the ordinary materials of a roof.

Question. What do you say as to the construction of windows, if they were to be placed in our halls; should they be single or double?

Answer. Windows are for light; they should never be designed, primarily, for the admission of air, and therefore should be double, so as to protect the room from the influence of external heat and cold.

Question. I desire to ask you, having looked at Mr. Anderson's plans, whether the introduction of air at the ceiling and its removal at the floor is feasible, and likely to effect the object designed by it?

Answer. It is feasible, certainly, with sufficient power applied. It is against the natural tendencies of air; it is contrary to gravity; and so far requires additional power to overcome the natural tendency of heated air to rise. If the plan were varied so as to admit the heated air from below, and escape above, I think it might be an advantage, as it would consult the natural tendencies of the air. In regard to the object that might be gained by this reversion of the current from above, downwards, with respect to sound in the room, I must speak hesitatingly. My impression is that not much would be gained by this reversion of the current. It is true that a strong current of air will, to a certain extent, affect the passage of sound. A person speaking against a strong current of wind will be heard more distinctly in his rear than from the same distance in front. But in this case the current would not, I suppose, be stronger than three or four feet in a second—more than that would create a breeze that would be objectionable—and as sound passes 1,180 feet in a second, the advantage, if any, would be very slight. If the air can be kept perfectly still, I believe that is a condition most favorable for hearing. It is for that reason that the old Gothic churches are more favorable in respect to acoustics than large square rooms. This plan, however, has never, to my knowledge, been tried, and therefore, I say, I cannot speak confidently. I do not wish at all to impress my opinion upon the committee as to the effect of the downward current upon acoustics, but my impression is that the difference would be slight in the point gained, while the disadvantage would be more decided in overcoming the natural tendencies of air.

Question. Have you ever made experiments, which are in your recollection, as to the amount of force necessary to move a column of air downward in a given space, so that you could speak as to the general application of Mr. Anderson's plan in this respect?

Answer. I have made no such experiments. It is a complicated question. A certain amount of air is driven in by the first machine. It is then heated, and its bulk increased at least one-twelfth, in the plan proposed, by rarefaction. A larger amount of air is therefore required to be removed, and more power must be applied to the exhausting fan.

SATURDAY, *January 28, 1865.*

CHARLES F. ANDERSON, architect, examined.

By the chairman:

Question. Will you state your views of the western projections of the Capitol wings?

Answer. In the plan I made for the new wings I brought them forward toward the east so as to commence them on hard ground, thus avoiding the new embankment. Another reason for doing so was to complete the outline of a Roman building, as the old Capitol was of Roman architecture, so as to provide a courtyard in front on the east. We have numerous authorities for that arrangement. I gave in my description to President Fillmore, at the time, as authority, Buckingham palace and St. Peter's at Rome, both of which have large court-yards, and, in fact, I gave different private residences in which many of the nobility lived, as illustrations. There is really hardly a regular Roman building that

has not a court-yard in front. These court-yards are generally entered through a triumphal arch. The college of architecture in which I studied was a Roman structure built by the Duke of Leinster for his own mansion. It was an extensive Roman building, something like the Capitol, but with a large court-yard in front, entered by a triumphal arch of peculiar beauty. I could give numerous instances of the same kind. The first time I saw the effects of building these wings on the original surface below the new embankment was immediately after the House was roofed and before it was plastered, which was about the time Mr. Buchanan came into office, at the commencement of 1857. I found the west brick wall of the Senate wing cracked from top to bottom; the crack was widest at the top and large enough to put your hand in. I afterwards saw it filled up with brickbats and mortar. I next observed that the north side of this west corridor, opening on the west side, had opened from end to end. They stopped it up; it opened a second time, and I saw them stopping it the second time with plaster of Paris.

By Mr. Howard:

Question. How long time intervened between the first and second time?

Answer. About two years. I next observed an opening in the joints of the marble work on the north end. I was present when the men were stopping up these openings, and saw them stopping them up and pointing them up to hide them. General Franklin's report to Congress, under date of November 6, 1860, (a report on the Capitol,) states, that "in July last the levels of the cornice of the two wings of the Capitol extension were taken. It appears from the levels that, at the top of the granite basement cornice, the west side of the south wing is four and one-eighth inches lower than the east side, and at the corresponding point on the north wing the west side is two and seven-eighths inches lower than on the east side. These figures are given, not because any danger is anticipated, but only to place the data on record in permanent form." I recommend that you finish these arcades with cornice and balustrade at the top, which will produce a good architectural effect, by carrying out the principles of Roman structure, more fully than to finish them as heretofore proposed; inasmuch as they never intended to put a portico there, but merely a colonnade over the arcade. They intended to carry round the entablature on that colonnade—the same entablature that they have on the end of the building. The effect of it would be simply this: a column before each pilaster has no object of any kind affected by it. It involves an additional expense of marble work, and excessive weight, without any possible advantage. Standing at right angles with the building, these columns would not be seen more than the pilasters would standing by them; they merely obscure the pilasters and deprive the numerous offices on each side of the building of air and of light; it being an object in architecture never to introduce an ornament without a purpose and object. In every well-designed architectural building there never is an ornament introduced that has not its object, which this feature of the design of the Capitol has not. The same observation is applicable to all of the four colonnades—north, south, and two west—with this exception, that there is no necessity for precaution in respect to weight on the north and south sides.

By the chairman:

Question. Is the proposed work you have spoken of very expensive, according to the present design?

Answer. There have been two appropriations made for finishing the steps and portico of the building on the east side. There has been one appropriation of \$300,000 for finishing these four colonnades, no part of which has been expended. The only way I can get at the price of that work is the amount of that appropriation. I went to the Register's room, where the agreements for

this work ought to be filed, and got a certificate from the officer there that they never had been filed. I could not, therefore, give their exact price. The cost of the balustrading would be exactly the same as that already on, for it would have to conform to it.

Question. But you cannot state what that would be?

Answer. No, sir; no account has been filed of what anything cost, and, therefore, I cannot state precisely. It would be a great deal cheaper than the other plan, and it would, at the same time, admit more air and light. It may not be out of place for me to remark that, although this marble attic which I propose to erect around the two wings will add weight to the building, it will be on a perpendicular line with the building itself. It will not involve any leverage, as these columns do. Then, again, let me remark, that the attic need not be built while the ceiling is being raised and the windows inserted; that is to say, you can finish the ventilating arrangements without making the change required in the outside of the building, and afterwards the outside work can go up while you are sitting in the chamber.

Question. I will ask you as to the general appearance on the building of elevating the wings as you propose, and the reasons for doing it, in respect to the architectural appearance of the building?

Answer. The old building being Roman Corinthian architecture, it was essential, in carrying out the style, to break the sky-line of the building so as to form an irregular line. One of the principal differences between Roman Corinthian and Grecian Corinthian is, that Roman architecture must have a broken sky-line, while the Grecian must have a horizontal line. The Roman building must have balustrading, the Grecian building must have none. Whenever there is a deviation from these rules you have what we term bastard architecture and not pure architecture. I refer you to the Post Office building, which is Grecian Corinthian with no balustrading, and also to the Patent Office, which is a Doric building of Grecian architecture. The Treasury building, with its columns on part of it, was intended for Grecian Ionic, but they went and put a balustrade round it and broke up the architecture and made it a hideous thing.

Captain RICHARD R. MOFFATT called and examined.

By the chairman :

Question. State whether you have studied architecture.

Answer. I studied it while in the west.

Question. I will ask you, if you have examined the subject, your opinion as to the architectural effect upon the Capitol building of an elevation of the wings?

Answer. I have taken a great interest in architecture, and have paid particular attention to the Capitol building. I find in it a long-continued line of cornice without break. I think such an elevation as is shown will add to its beauty, giving it a more Roman Corinthian style of architecture. It will add not only to the appearance of the exterior but to the interior of the building. I think, in the hall of the House of Representatives particularly, the ceiling is too low for acoustics or proportion.

January 31, 1865.

Examination of WILLIAM FORSYTH, of Washington, D. C., city surveyor.

By the chairman :

Question. State whether you took the levels of the Capitol wings to-day?

Answer. Yes, I have taken the levels of the north and south wings this afternoon.

Question. State how you found them.

Answer. I found that the northwest corner of the north wing is $2\frac{1}{2}$ inches lower than the northeast corner of the same wing. I found also that the southwest corner of the south wing is $4\frac{1}{2}$ inches lower than the southeast corner.

Examination of ISAAC BASSETT, of Washington, D. C.

By the chairman :

Question. State whether the two papers shown you are statements of temperatures in the Senate chamber taken under your superintendence at the dates mentioned?

Answer. Yes, sir.

Question. Are they correct?

Answer. Yes, sir, as far as I see.

Question. They were taken by request of the committee?

Answer. Yes, sir.

[The statements are annexed to this record.]

Examination of Dr. JOHN A. ROWLAND, of Washington, D. C.

By the chairman :

Question. State how you are employed.

Answer. I am employed as clerk in the Attorney General's office.

Question. State whether you have experimented by adding moisture to the air of the office?

Answer. I have in some of the rooms during the present winter and the winter before. I have added moisture to the atmosphere with good effect by evaporating water in the rooms. It has produced a very great improvement in the air of the rooms, and I have no doubt that such a statement would be made by the Attorney General and his assistant. I have heard them both remark very favorably upon it.

Question. State whether you have examined works on the subject of moisture in the atmosphere, and have made out a statement of citations which you now submit to the committee?

Answer. Yes, sir. This statement is from what I believe to be reliable authority.

[The statement is annexed to this report.]

Witness. The office of the Attorney General is located in the south wing of the treasury building; it is warmed by heated air sent up into the room through flues. To counteract the dryness of that air we introduced gas stoves by which we evaporate a large quantity of water during the six or seven hours we are there—say two or three gallons in each room. The rooms are twenty and twenty-two feet by fourteen feet high. We found that to improve the comfort of the rooms very much. When the room seems supplied with moisture the openings for the escape of the air are permitted to act. The opinion at which I have arrived in respect to it is, that in these rooms, even with the large amount of water we evaporate, there has not been any day too much moisture. It seems that the more we have been able to evaporate, the more comfortable have the rooms been. I have arrived at a strong conviction that if, in addition to heating the air, the feature of introducing the necessary amount of moisture were adopted, the air in the rooms would be as comfortable as the air out of doors is at the same temperature.

The chairman submitted the following statement of temperature in the Senate chamber, as observed by him, the observations being made from a thermom-

enter on the right hand side of the president of the Senate, and from one opposite on the south side of the chamber :

January 19, 12½ o'clock,	69½;	2½ o'clock, 70.
	74.	75.
January 25, 2 o'clock,	70.	
	75.	
January 27, 3½ o'clock,	71.	
	75.	
January 30, 12½ o'clock,	70½;	4 o'clock, 69.
	76.	72½.
January 31, 12¼ o'clock,	70.	
	74½.	

Examination of CHARLES B. CLUSKEY, of Washington city, D. C., architect and civil engineer.

By the chairman :

Question. How long have you been engaged in the practice of your profession ?

Answer. About thirty-four years.

Question. Have you been frequently employed in the examination of public buildings and public works ?

Answer. I have.

Question. And of government buildings ?

Answer. I reported on the government buildings here for the Committee on Public Buildings of the 30th Congress, which report is numbered 90.

Question. Have you examined the wings of the Capitol and determined what settlement, if any, has taken place in their foundations since reported on by Captain Franklin ?

Answer. I have ; and with the exception of the foundations of the steps on the west end of the south wing, no material settlement has taken place of the foundations proper of either wing since the report of that officer.

Question. Have you examined the plans prepared by Charles F. Anderson for improving the architecture of the exterior of the Capitol, and the heating, ventilating, and lighting of the halls ?

Answer. I have.

Question. I desire to ask your opinion as a professional man as to the effect of elevating the wings by an attic, both as regards the architecture of the whole exterior, and the lighting of the halls through windows in the proposed inner attics instead of the present sky-lights in the roofs ?

Answer. The architectural effect would be essentially improved by an attic on each wing, as they would give elevation where required, and break up the present continuous horizontal sky-line ; and I would further suggest, that if the roof of each wing, when raised on its attic, was surmounted by a semi-dome (cupola) harmonizing in detail with the dome proper, and all projections above the line of the balustrades of the old building removed, and increased projection given to the east portico, so as to correct the defect created by the excessive proportions of the dome, the magnitude, grandeur, and unity of the whole composition would be greatly improved. As it regards the lighting of the halls through windows in the inner attic walls in place of the present skylights, the effect would be to give height of ceiling, illuminate the halls uniformly throughout, give to them a cheerful instead of their present gloomy appearance, and shut out the noise created during heavy rain or hail storms, which frequently disturbs the progress of business.

Question. Would you recommend the windows to be made double ?

Answer. I would.

Question. What object would be accomplished by that ?

Answer. Double sashes, properly constructed, with a space between them, would aid very materially in preserving the uniform temperature of the air in the halls in both winter and summer.

Question. What other benefit would be gained by windows over the present skylights ?

Answer. The advantage of their being thrown open when necessary, and particularly after the adjournment of Congress, thus filling the hall with a volume of pure air, and correcting whatever remains of the impurities created, (particularly when the galleries are crowded,) which may not have been drawn off by the mechanical means designed to control them.

Question. What improvement, if any, would you recommend in the present mode of lighting the halls at night ?

Answer. The substitution of reflectors, as they would greatly lessen the number of distinct lights now used, and would be more economical, and equally, if not more, effective than the present mode.

Question. Is it your judgment that a very considerable loss of heat in the halls is produced by the present glass roofs ?

Answer. It is, particularly during such weather as we had the present winter ; for, from careful experiments, it has been found that 800 superficial feet of glass will cool down over 1,000 cubic feet of air as many degrees per minute as the internal temperature of the room exceeds the temperature of the external air.

Question. Is not the effect of a cold glass surface to throw down currents of cold air ?

Answer. It is.

Question. Did you hear the statement of Dr. Antisell in reference to the upward movement of dust from the floor by the ascent of the air as introduced at present ?

Answer. I did.

Question. Do you concur with him in his views ?

Answer. I do.

Question. Would not the effect of Mr. Anderson's plan of removing the air below be to obviate this difficulty ?

Answer. It would.

Question. Would the downward movement of the air tend to produce greater uniformity in the action of the air towards the floor ?

Answer. All things being equal, there would be no difference between the unity of an ascending and descending current, for as Mr. Anderson's plan is to use one fan to supply the pure air, and another to draw off the impure, the air would be controlled by the power and harmonious action of the fans and not by its increased or diminished temperature, as it is at present, to a great degree.

Question. What effect, in your judgment, would the plan of bringing down the air have on the action of *sound* in the House ?

Answer. My opinion is that the hearing would be improved.

Question. Would the air descending be broken by currents and of unequal temperature or would it be uniform throughout ?

Answer. It would be nearly uniform—an inappreciable portion of it only affected near the floor and ceiling, provided the apertures in the ducts through which it enters the halls are of uniform size and numerous, *like a sieve*, and the apertures for the exit of the impure air alike numerous and uniform, and distributed close to the floor line.

Question. In your judgment would the air be less broken by currents than at present ?

Answer. In my judgment it would, for as the air now enters the halls, the currents are manifest and numerous ; and from the disparity in the dimen-

sions of the apertures through which it passes and the irregularity of their distribution, it cannot be otherwise.

Question. Is a fan the proper instrument for introducing and exhausting air?

Answer. It is so considered by architects generally, and I know of no better means.

Question. In your opinion could or could not this downward action of the air be controlled by a fan as proposed?

Answer. In my opinion it could.

Question. By this plan of Mr. Anderson would it or would it not be possible to introduce the air into the chamber above, and remove it below, or to reverse the movement?

Answer. It would.

Question. In reversing the action what changes would be necessary?

Answer. The location of the hydrating apparatus and of the heating apparatus.

BENJAMIN SEVERSON called and examined.

By the chairman:

Question. Will you state in what capacity you were employed in the construction of the Capitol wings, and what was done by you?

Answer. I was employed on the Capitol roofs and ceilings, in putting up the iron work, and generally as mechanical engineer. The work was performed under the direction of General Meigs. I was sent for in the first place to raise these iron roofs.

Question. On whose recommendation?

Answer. That of Stephen Colwell, Philadelphia.

Question. Did you put up the glass roof?

Answer. I put up the iron roof and then covered it with glass, copper, &c. I then had the supervision of putting up the ceilings.

Question. Will you state how the ceiling is made; whether it is capable of being removed and replaced readily; and if so, your reasons?

Answer. The ceiling is made of cast iron, in the form you see it. It is generally about a quarter of an inch thick, made in convenient pieces for handling, and put together with screwed bolts. I think there is not a rivet about the fastenings; I think it can be all unscrewed. That is my impression, and I inquired of the contractors, who told me the bolts were all screwed. It can be readily taken down, the plates laid aside and put back again when required. It will require nice care of course to replace the parts relatively, so that there shall be no mistake.

Question. Have you made estimates of the expense necessary to accomplish that purpose?

Answer. I have taken considerable pains to get at that reliably, and I have given my estimate in the form of a proposition. When I was asked the question at the last session I did not like to state until I could make a reliable estimate, which I have since done.

Question. Have you planned or designed buildings in your time?

Answer. That has been my business for the last twenty-five or thirty years.

Question. Have you designed churches, court-houses, &c.?

Answer. Yes, sir.

Question. Did you design the marine hospital at New Orleans for the government?

Answer. Yes, it was designed by me. After the government architect here had given me the number of rooms they wanted, I made the design, making the entire exterior of iron. I made the design of the roof of the custom-house and post office at Baltimore and several other buildings of that kind.

Question. What effect would the elevation of the wings as shown on Mr. Anderson's plan have upon the general appearance and architectural appearance of the building?

Answer. I do not pretend to be a finished architect, though I have some experience in these things. My opinion is that it will be decidedly favorable. I think the plan requires it. I think it would be a decided advantage to have such an elevation.

Question. What do you know of the settling of the new work of the Capitol on the west side of the two wings?

Answer. I cannot give the exact amount, but I know that in 1856 they were settled so much that we had to make an average of it in setting the iron work around the rooms. The building had settled less on the east side than on the west, there being a more perfect foundation on that side.

Question. What will be the effect of putting these proposed colonnades or porticoes on the west side of the wings?

Answer. The effect will be very injurious, for the reason that these porticoes are, as it were, detached from the old building, and will not have the advantage of its support. They will act with a leverage, as it were, being detached, and break their connexion. In my opinion it ought not to be done. That portion of the portico already up is yielding. I think you can see it on both wings, worse perhaps on the north than on the south wing.

Question. Could these spaces be finished with simple balustrades?

Answer. Yes, something of that sort; the architect could arrange it. I would not put up the columns as projected on the west side. I would dispense with the columns and entablatures both.

JACOB D. FORNEY called and examined.

By the chairman: -

Question. Has the book now produced by you been kept by yourself or under your own supervision?

Answer. It has been kept under my own supervision.

Question. It contains, does it not, regular statements of various work, and particulars regarding the temperature of the hall of the House?

Answer. Yes, sir.

Question. Will you state where your observations of temperature were taken?

Answer. In the hall of the House of Representatives, three times a day, at 9, 12, and 3 o'clock. I took the average of the hall.

Question. How many thermometers?

Answer. There were six, I believe.

Question. And your statements show the average temperature by these thermometers?

Answer. Yes, sir.

Question. Do you believe these statements to be accurate?

Answer. Yes, sir.

Question. State what you have charge of in the Capitol.

Answer. I have charge of the heating and ventilating apparatus in the House of Representatives.

Question. How long have you been in charge of that apparatus?

Answer. Since February, 1864.

Question. Will you state your opinion as to the place of obtaining the air introduced, and its effect upon it?

Answer. In my opinion, in the summer time the temperature of the air is considerably raised by the rays of the sun beating upon the terrace and upon the sides of the building where the air is taken in. The air is taken from between the wings and the old Capitol, about the level of the terrace. I find that

the current of air thus taken into the south wing carries dirt and dust with it, and piles it up around the entrance against the sides of the building.

Question. Does the air pass a window on its way through?

Answer. There are two windows in the air chamber on the basement floor, and three on the upper floor.

Question. Do you find great irregularity in the thermometers at the same level in the hall?

Answer. Yes, sir, they vary on the average about three degrees on opposite sides of the hall.

Question. Have you taken observations in the galleries?

Answer. I have not.

Question. Nor in the space between the ceiling and roof.

Answer. No, sir.

Question. Have you charge of the roof?

Answer. Yes, sir.

Question. Can you state what inconveniences you find in connexion with the roof or upper part of the building?

Answer. During storms, or very heavy cloudy weather, it becomes very dark, and we have to light the ceiling at different times during the day. During rain-storms, it is almost impossible to hear anything in the House hall, on account of the sound from the copper roof. Last Sunday I noticed particularly, when the ice began to slide there was a tremendous sound, like distant artillery, which alarmed almost everybody in the house.

Question. State whether there is any leakage in the glass roof.

Answer. Yes, sir; it leaks probably in a dozen places.

Question. How do you remove the water?

Answer. We have to sponge it up.

Question. Does the space between the ceiling and roof become very much heated by the gas-lights?

Answer. Yes, sir; a man could not stand there ten minutes when the gas is lighted. I can stand considerable heat, but it drives me off.

Question. How many jets of light are there?

Answer. Over 1,200, I think.

Question. What is the effect of their being lighted on the temperature of the hall, if you have observed it?

Answer. In my opinion it increases the heat of the hall.

Question. Have you ever taken an observation of the heat on the floor before lighting the gas and afterwards?

Answer. I know it is much hotter after night in the hall, when the gas is lighted, than during the day. When the thermometer was at 80° or 83° during the day, I have seen it run up to 85° or 87° at night.

Question. What is the practical effect of the registers admitting air through the floor into the hall of the House?

Answer. They are used as much for spittoons as for admitting air, and there must be considerable nauseous effluvia arising from them from that cause. They are also used to sweep the dirt into.

Question. Are not the air chambers below very dirty?

Answer. We have found them very dirty.

Question. You have found them to contain "old sogers," and stumps of cigars, have you?

Answer. A plenty of them. Under the large registers we have found dried tobacco juice half an inch thick.

February 2, 1865.

The committee met.

Present: Messrs. Buckalew, Pike, and Smithers.

Examination of General M C. MEIGS.

By the chairman :

Question. State whether the work of Professor Reid is one of those books that you consider standard works on ventilation.

Answer. I think Professor Reid's work a very valuable one; but I think Professor Reid makes a great many mistakes. His works are very valuable, but I do not believe in all his conclusions by any means.

Question. What do you say as to the work of Professor Wyman?

Answer. Wyman's work I have read, but it is only a very general and rather superficial work, I think.

Question. Is it, in your judgment, a standard work on that subject?

Answer. I should not like to express an opinion about that. I do not recollect that I learned anything from it at all. I am not sure whether it contains errors or whether it is all right. There is a French book on heating, by Péclet, which is one of the most exhaustive works on the subject, and gives all the latest information, up to the time of its publication, on the subject of the art in France.

Question. What is your opinion of the present system of ventilating our halls?

Answer. I think it is the very best that can be devised.

Question. Equal to anything in the world?

Answer. I think it is the very best in the world. I have no doubt of it.

Question. Can you suggest any improvement in it?

Answer. None, if you have an intelligent man to regulate the heat.

Question. I am speaking of the plan.

Answer. No, sir, I cannot.

Question. In introducing air through the floors of the halls, do you consider the present plan of vertical ascent preferable to its introduction through the risers of the steps?

Answer. Yes, sir, and I can give you my reasons for it. In first arranging the details of the ventilation of the Senate chamber I introduced the air through the raisers of the steps, following Dr. Reid's ideas, making the openings as large as possible, so that the air should be diffused over the greatest area, and placing several thicknesses of wire gauze behind these openings so as to prevent a current of air as much as possible, and get as large a quantity of air as possible without its being felt between the person's legs. The hall was occupied by the senators very soon after this arrangement was completed; and before I had time to make any experiments and ascertain the result; I soon found a general complaint that the current of air was sensible, acting on the backs of the legs of the gentlemen who were seated on the various terraces on the floor, producing great discomfort, rheumatism, and such effects. That compelled me to change the whole thing, and let the air come in vertically. I tried that whole thing completely, and had to give it up.

Question. Did you also make a change by introducing air into the sides of the rooms?

Answer. At the sides of the rooms I placed shields before the openings so as to deflect the currents. People sitting on the sofas in the Senate chamber complained of the currents of air, and I sat there myself and found it so. I had not sufficiently realized the fact that warm air produces cold as well as cold air. It produces evaporation of moisture, and that produces cold.

Question. You speak from experiment?

Answer. I tried the thing and failed and had to give it up.

Question. Do you see any objection to placing a glass roof over the halls in connexion with the ventilation of the chambers?

Answer. There is a glass roof there now.

Question. Do you think there is any difficulty created in the ventilation by the glass roof?

Answer. No, sir; the glass roof has openings through which the air can escape. I left openings all around the edges of that glass roof, so that the air might escape generally through the ceiling as well as through the cornices.

Question. Would it not be an improvement if the glass roof were doubled?

Answer. It is already doubled. There is a glass roof and a glass ceiling. I do not see what would be gained by putting a third one in.

Question. Would it not prevent the loss of heat very much?

Answer. It would if the air in the room were still. Of course, the greater thickness you give to the roof the less heat would be lost by radiation. But you are now depending for the heat of the room upon the temperature of the air introduced. If you can bring in a certain quantity of air, of a certain temperature, every minute, and let it escape, it makes no difference whether the ceiling is thick or not.

By Mr. Pike:

Question. There are apertures enough to change the air, how often?

Answer. There are apertures enough, I think, to change it every five minutes. In the hall of the House, I think, 50,000 cubic feet of air can be supplied every minute. It is long since I looked at the figures, and I cannot trust my memory to speak with accuracy.

By the chairman:

Question. In your judgment, no exhausting power is required for ventilation?

Answer. No, sir; the ventilation is sufficient if the machinery is kept in order.

Question. State what objection exists to placing our halls at the sides of the wings?

Answer. When I took charge of the Capitol extension I found a plan being executed in which the hall of the House of Representatives was placed at the west end of the south wing, with windows on the three sides. I considered that there was danger of interference with debate in legislation by the effect of exterior noises which would come in through the windows. I noticed that in some public rooms in New York, churches, and other buildings which I had visited, this was a very serious inconvenience. Then the glass, cooled by contact with the external air, would produce currents of cold air within the room itself, which are sources of discomfort in the winter. It seems to me that members, occupied in the business of legislation, did not need, and would not have time to enjoy, any external prospect. I could secure a greater uniformity of temperature by placing the room in the centre of the building, removed from the external walls, and greater facility of ingress and egress by having corridors and galleries all around the hall. The waiting rooms, smoking rooms, committee rooms, &c., which are placed against the external walls, could thus be arranged so as to be of convenient access to members when not occupied in debate or legislation. All these considerations had their weight in inducing me to alter the plans and adopt those that have been executed.

Question. Would there not be another objection to a side exposure, from cross lights?

Answer. Yes; I had forgotten to mention that. I should add that one serious objection to windows on external walls is the disagreeable effect upon a speaker of having a bright light shining into his eyes when his face is turned toward any part of his audience. This, I think, was mentioned in the memoir

which I prepared on the subject at the time I took charge of the building and recommended the alteration of the plans.

Question. Is there any objection to obtaining the air, as at present, from the terraces?

Answer. I think not. It has been suggested, and I thought of it myself, to take the air from a higher point. It is a favorite idea to take the air for ventilation from a high tower, but I do not think that any real advantage would be gained from it. This terrace is clean, and it is eighty feet above the surface of the water. If you draw the air through a shaft leading up to the roof of the building you would be taking it at the level at which all foul air shafts discharge—at which all chimneys discharge their smoke—and you would be liable to draw and force into the interior of the building the very impurities which have been just expelled.

Question. State whether the present arrangement in ventilation is, throughout, your arrangement?

Answer. I cannot say that it is entirely my design or my work, because I had most skilful assistants.

Question. Is the present plan of ventilating the Capitol your arrangement?

Answer. Yes; it is my arrangement, with the assistance of men of skill.

By Mr. Smithers:

Question. You approved it?

Answer. Yes. I saw that an appropriation of \$1,500 was made last year for some changes. What those changes were I do not know; nor do I know whether any alterations in my plan have been made. But, unless there have been changes within the last year or so, it is as I made it.

By the chairman:

Question. I ask you your judgment of the capacity of Mr. Walter on the subject of ventilation?

Answer. I would rather not answer that. I think Mr. Walter a very skilful architect, and a man of taste in his profession; but I think he has not even a smattering of science, and on all scientific questions his opinion is of no value.

THURSDAY, February 2, 1865.

Re-examination of Benjamin Severson.

By the chairman:

Question. State whether you have measured the extent of the glass roofs on both wings of the Capitol.

Answer. Yes.

Question. State the dimensions of the glass roof of the House and Senate, respectively.

Answer. The area of the glass surface of the House roof is 4,049½ square feet, and of the Senate 3,412½ square feet.

Question. It is a single roof?

Answer. Yes, a single thickness.

Re-examination of Jacob D. Forney.

By the chairman:

Question. State the capacity of the fan in use in the House for delivering air to the hall.

Answer. I never made an exact calculation of it, but, as a mechanic, I made

an estimate that the fan, running at the revolutions we run it now, delivers about 50,000 cubic feet of air per minute. We run it from 45 to 50 revolutions a minute.

Question. How much would it deliver if you used its power?

Answer. If the engines were properly constructed so that it could be run up, I could make it deliver double that quantity.

By Mr. Smithers:

Question. What can it deliver as now constructed?

Answer. I cannot run that engine with safety over 50 revolutions a minute, from the simple fact that the journals of the shaft are so small that they become heated and require to be cooled down.

By the chairman:

Question. There is another fan used for delivering air to the passages, corridors, and committee rooms?

Answer. Yes.

Question. That fan is less powerful?

Answer. Yes, it has not more than half the power.

Question. State whether there have been any of the air passages under the House closed, and, if so, for what object?

Answer. Last summer I found considerable complaint that there was not sufficient ventilation in the hall. After going under the floor of the hall and making an examination myself, I found a great many of the registers under the floor closed.

Question. For what purpose?

Answer. That I cannot say.

Question. What do you say as to the plumbing generally, under the floors—has it been well executed—can you readily make repairs there?

Answer. There is a great difficulty in making repairs there, especially to the water pipes, gas pipes, &c. Being almost thoroughly imbedded in cement, it requires a cutting up of the tile-floors to get to the pipes.

Question. Have you charge of the roof and of the upper part of the building?

Answer. Yes.

Question. State whether storms beat in at the ventilators?

Answer. Several different times, to my knowledge, rain has come in through the ventilators to the ceiling, and through the ceiling to the floor of the House.

By Mr. Smithers:

Question. In any quantity?

Answer. It was considerable enough to wet the floor and the desks of members in several places. I had to place buckets on the ceiling to catch the drip, and also to sponge the water off the ceiling. I had also, several times, to place buckets on the floor of the hall to catch the water from the ceiling.

By the chairman:

Question. What is the consumption of gas for lighting the hall of the House of Representatives?

Answer. About 7,500 feet per hour.

Question. In order to light the hall, do you use the full power of the burners?

Answer. Yes, we give them the full pressure of the gas, just so that the burners shall not blow, as we call it—so that gas does not pass through without being consumed.

Question. Is not the effect of lighting your jets to produce a considerable amount of heat in the hall?

Answer. I have been always under the impression that it has that effect. I

have noticed particularly the thermometers rising at night, when the hall is lit, from two to five degrees.

Question. Is not the amount of heat produced in the space between the ceiling and the roof extremely great?

Answer. Yes, very great—so great that a man is not able to stand the heat there over ten minutes.

Question. After heating your halls in the morning, do you not reduce the power of the fan?

Answer. No, sir, but we reduce the pressure of steam. When the hall is properly heated by 10½ o'clock—say up to 63 degrees—I generally close off the main flow of steam and put on the exhaust. If, by 11½ o'clock, the hall is sufficiently warm I shut off the exhaust from the engine entirely and blow nothing but cold air into the hall for the remainder of the day. The brick-work underneath the floor of the hall becomes very warm from the amount of heat forced into it, and that keeps the air warm during the remainder of the day. I find no difficulty in heating the hall, but great difficulty in cooling it. That is the main difficulty with me.

Question. The effect of introducing an unusual amount of air would be to produce currents in the hall?

Answer. Yes, if the fan was driven at sufficient velocity.

By Mr. Smithers:

Question. Do you find it necessary to do that?

Answer. Through the summer I cannot get sufficient current through the registers.

Question. Owing to the want of apertures?

Answer. I cannot tell whether it is owing to the want of apertures or to the faulty construction of the air ducts.

By the chairman:

Question. Have you observed the difference in temperature in the summer between the air at the terrace and the air in the hall?

Answer. I can tell you by referring to my record here. I find that it runs about equal; that is, the temperature in the fan room and the temperature in the hall.

Question. I ask you of the difference of temperature between the terrace and the hall?

Answer. Taking it daily, there is a difference of about three degrees; that is, it is about three degrees cooler in the hall than in the fan room. But taking the average throughout, it runs about equal—the same temperature in the hall as outside.

Question. What degree of difference in temperature have you observed between the opposite sides of the hall?

Answer. About three degrees.

Question. Which side is the warmest?

Answer. The west side of the hall.

Question. Is that the side where the air is introduced?

Answer. Yes.

Question. Your record, as I understand, is a record of averages of temperature?

Answer. Yes.

Question. Of several thermometers in the hall?

Answer. Yes, of six thermometers.

*Average temperature by thermometers in the hall of the House of Representatives.**For week ending May 15, 1864.*

	12 o'clock.	3 o'clock.
Monday	77 ⁰	79 ²
Tuesday	77	81
Wednesday	77	79
Thursday	72	74
Friday	73	73
Saturday	73	74

For week ending July 3, 1864.

	12 o'clock.	3 o'clock.
Monday	87	87
Tuesday	77	78
Wednesday	76	79
Thursday	75	76
Friday	82	82
Saturday	85	84

For week ending December 18, 1864.

	12 o'clock.	3 o'clock.
Monday	70	73
Tuesday	70	74
Wednesday	70	75
Thursday	70	75
Friday	68	73
Saturday	72	73

For week ending January 22, 1865.

	12 o'clock.	3 o'clock.
Monday	70	71
Tuesday	70	72
Wednesday	70	72
Thursday	69	72
Friday	69	73
Saturday	68	72

*February 6.**John Kilby examined.*

By the chairman.

Question. How are you employed at the Capitol?

Answer. I am acting chief engineer of the Senate for heating and ventilating department.

Question. By whom employed?

Answer. By George T. Brown, Sergeant-at-arms of the Senate.

Question. What do you use in the warming pipes—hot water or steam?

Answer. Steam.

Question. Steam exclusively?

Answer. Yes, sir.

Question. Is there any arrangement for ejecting steam into the air between the fan and the Senate chamber?

Answer. There is none.

Question. But there is such an arrangement as to the air for the committee rooms and passages?

Answer. Yes, sir.

Question. But in practice you do not use steam for the rooms and passages?

Answer. No, sir. The reason is, if I use it to any large extent I make the furniture, glass, and walls reek with sweat. I found such effect caused by accidental breakage of steam in the coils. I think the effect of steam or hot air is to cause an unpleasant odor.

Question. What explanation do you give of the difference of temperature on opposite sides of the Senate chamber?

Answer. Some of the openings are closed on the north side. They can be opened.

Question. What pressure of steam do you use on the pipes?

Answer. I suppose an average pressure of 8 or 10 pounds to the square inch, say from 5 to 15 pounds. It depends upon temperature of external air used.

Dr. THOMAS ANTISELL re-examined.

By the chairman :

Question. Have you given personal examination to the ventilating arrangements of the Senate wing of the Capitol?

Answer. I have; the day before yesterday.

Question. What capital defects, if any, did you find in the ventilation?

Answer. That no hydration of the air was secured, and that the removal of the vitiated air above was incomplete.

Question. What do you say as to the heating arrangement?

Answer. The amount of heating surface of the pipes is ample, but if any of the compartments of pipes become defective their equivalent cannot be supplied. The arrangement for hydrating the air passage is defective and inoperative. The place from which the air is pumped or taken is objectionable, as liable to derive impurities both from the flagging and the walls of the building.

Question. Were you in the gallery of the Senate chamber, and what observation did you make there?

Answer. I was in the strangers' gallery and observed that the air had a strong smell of men and clothing; showing that the vitiated air was not fully removed.

Question. Did you then proceed to the air space above, next the roof?

Answer. Yes, sir; and we there found that the ventilation was accomplished by four air chimneys, 30 by 30 inches each, covered with a cap or cowl. This, Mr. Brown, the sergeant-at-arms, informed me was his arrangement, superseding the ridge ventilation of former plan. Now, when we contrast the capacity of those four air chimneys with the capacity of the supply passage, we find the former to have an area of twenty-five square feet, while the area of the supply shaft or passage is a little over thirty. There is, therefore, a want of equivalent capacity. Then the current in the supply shaft is at the rate of between six and seven miles per hour, while that of the air escaping from the air shafts of the roof does not amount to four miles per hour. There is, therefore, a deficient capacity equal to one-sixth, and a deficient movement equal to one-third.

Question. What do you say as to the roof?

Answer. The materials of the roof—glass and metal—are very objectionable if the air space below is to be used as at present. The glass warms it unduly in summer, and the metal cools it unduly in winter. If the air is to be brought into the chamber from above, (as proposed by Mr. Anderson's plan,) there should be air ducts over the ceiling, well protected from external heat and cold.

Question. Would an inner roof, counter-ceiled or covered with a non-conducting material, exclude the noise of storms from the chamber?

Answer. The double-roof itself, with an air space between, would be one of the best arrangements for the non-conduction of sound.

Question. Would the filling in or covering the inner roof, as suggested, have

additional effect in excluding the influence of the external atmosphere upon the air between the inner roof and the ceiling?

Answer. Yes, certainly.

Question. For filling in or covering the inner roof, is broken pumice-stone, with liquid cement, a proper material?

Answer. I know nothing better; combining, as it does, lightness, solidity, and incombustibility.

Question. What is the effect of the hot air under the roof?

Answer. Its accumulation there, without sufficient means of escape, is to back-up against the out-going currents from the Senate chamber and prevent their escape.

Question. What do you say as to the use of fewer lights over the ceiling, *with reflectors*?

Answer. There is advantage in many lights in producing softness and lighter shadows, but as at present arranged they are an obstruction to ventilation. Fewer lights, with reflectors, might be equally satisfactory, and aid the ventilation vastly.

Question. Would not the descent of the air in the halls obviate the present defect of dust rising in the room from the floors?

Answer. Certainly.

Question. In changing the course of the air in the halls from an upward to a downward movement, what effect would be produced upon the air near the floor, as to uniformity of movement and temperature?

Answer. The temperature would be more uniform, and as to movement, that would depend upon the force of the exhausting fan.

Question. Would there be an advantage in chimnies with the proposed lights as shown in the new plans?

Answer. Yes, sir, by removing the immediate products of combustion from the lights, and by ventilating the air space above the ceiling.

Question. Would there be less heat thrown down into the halls from the lights than at present?

Answer. Certainly, by the process of removal of products of combustion and the heated air.

Question. Would there be a saving of heat by the change?

Answer. I think so.

Question. What do you say as to the feasibility and success of Mr. Anderson's whole plan, as compared with the present arrangement?

Answer. It would be much more effective than the present plan, and feasible in its details.

Question. Can the plan be exactly reversed as to direction of the movement of the air, if desired hereafter, assuming that it should now be adopted?

Answer. Certainly, with little expense and alteration.

Question. What credit is to be attached to Professor Wyman's work on ventilation?

Answer. It is a very valuable and reliable work on the subject. We would refer to it for principles and rules, rather than for practical details.

The witness adds:

The present means of escape in the apertures in the Senate ceiling, are not in my opinion sufficiently extensive; and, if Mr. Anderson's plan should be adopted, would not be sufficient for the ingress of the air. Placing wire gauze screens in the parallelogram spaces along the sides of the ceiling would afford increased facilities for the entrance of the air.

With regard to admitting the air at the sides of the Senate chamber, and its cooling effect upon individuals, (which have been mentioned,) such effect is not so much due to the velocity of the air as to its aridity. When I stood in the air passage below, with the air blowing at full velocity, the effect was chilliness of the surface, the air being at 70° with an out-door moisture of 30°.

FEBRUARY 14, 1865.

Dr. CHARLES M. WETHERILL examined.

By the chairman :

Question Have you taken the dew point in the Senate chamber this winter with instruments ?

Answer. Yes, on two occasions, January 24 and February 9. The first day the observations were as follows :

	Dry bulb	Wet bulb	Relative humidity.
In ladies' gallery, near reporters' gallery,			
2½ p. m.....	72°	55°	27°
Do., near diplomatic gallery, 2 40 p. m...	72.3	55.4	27
External air entering ventilating fan, 3			
p. m.....	29.8	25.2	56
In post office, near the window, 12¼ p. m.	61.9	51.8	46
Do., on mantel-piece, same time.....	70.2	55	32

Question. What is meant by "relative humidity?"

Answer. It means the amount of moisture present, with reference to saturation taken as 100.

Question. What observations did you make on February 9?

Answer. The air entering the fan (the fan making 45 revolutions per minute) had a temperature of 30.6°, and the relative humidity was 55°. This was at 2½ p. m. In the southeast corner of Senate chamber, on level with desks, at 3½ p. m., the temperature was 70.9°, and the relative humidity 20. In diplomatic gallery, at 4 o'clock, the temperature was 68°, and its relative humidity 21. In the illuminating loft, or air space between the ceiling and roof, in northwest corner, at 4.30 p. m., the temperature was 64°, and its relative humidity 27.

Question. What is the average relative humidity of atmospheric air?

Answer. According to the results of the meteorological observations made at the Smithsonian Institution, published in executive documents for 1st session 36th Congress, the mean relative humidity for Washington in June, 1859, was, for 7 a. m., 75; for 2 p. m., 56; for 9 p. m., 76. The minimum results for the same hours, during same month, were 42, 31, and 51. For month of February, for same year, the mean relative humidity was, at 7 a. m., 80; at 2 p. m. 62; at 9 p. m., 71; and the minimum for those hours was 36, 34, and 33. H. E. Roscoe states that in the House of Lords the air is pleasant to breathe when its relative humidity ranges between 55 and 82. He also states that the mean annual relative humidity for England is about 75.

MR. ANDERSON'S STATEMENT.

[At the request of the committee, Mr. Anderson states the following particulars of his professional career.]

I am 63 years of age; have been studying and practicing my profession exclusively and without intermission since the year 1819; was educated at the Fermoy college, in class with Dr. Shelton Mackenzie, of the Philadelphia Press; studied classic architecture under Messrs. Harrison and Hargrave as an apprentice for five years; afterwards studied Gothic, baronial, ecclesiastical, and monumental architecture under Messrs. Pain, of London, while architects to the ecclesiastical commission for Ireland. While under their instruction, I superintended the construction of Emly cathedral, and had considerable experience in heating and ventilating ecclesiastical edifices, with a view to good ventilation and acoustics. I commenced practice on my own account in 1829, by competing for and winning the premium for the approved design of the great Catholic university for Ireland, at Thurles, near the ancient city of Cashel.



While conducting the construction of that building, I designed and erected Spring House, an extensive mansion for John Low, esq.; Bansha castle for the lord lieutenant of the county; Castle Cray for G. L. Bennet, esq.; and the Episcopal church and national school building in the town of Tipperary; I also brought water into that town, and built the Savings bank. I was employed on the staff of Alexander Nimmo, the engineer-in-chief to the British government, and was employed with his two brothers-in-law, McGill and Simpson, in the construction of the works on the Shannon, and the Limerick bridge, the greatest work of the kind in Britain. Afterwards conducted the erection of the bridge across the river Tay, at Strad-bally, and the bridge across an arm of the sea at Ballyvoile; also the water battery at Duncannon fort, which guards the river Shure, where General Slade was in command. I superintended the erection of the new county jail, Waterford, and the jail and court-house in Middleton, county of Cork. I won the government premium for the classification prison for Ireland, which brought me into notice. I was permanently employed as architect and chief engineer on the estates of the present Earl of Kingston, and built a great deal for him. Also built a mansion for Lord Masscy. I designed and superintended the building of Ash Hill castle, for Eyer Evans, esq.; Castle Ivers, for Robert Ivers, esq., and Farney castle, for Captain Armstrong. I conducted the buildings of the poor law commission, in the counties of Cork and Tipperary. I was extensively employed on the estates of the Earl of Bantry, Sir George Coldhurst, M. P., Sir William Wrixen Beacher, and Sir Robert Abercromby.

I designed and built Anner castle for the Rev. Nicholas Herbert Mandeville, cousin to the Marquis of Waterford; also, Jenkinstown castle, for the sister of the Marquis of Shrewsbury; and Milltown house, for George Gubbins. I made some beautiful buildings for J. Power, M. P., of Gurteen, step-son to the Hon. R. L. Shiel, master of the British mint; also for his brother, Sir John Power, of Kilfane. I also remodelled Tara hall for Lord Tara, and built the Deer Park house, near Cashel, for Hon. John Hare; Bantry house, for J. O'Connell, and the Presbyterian church in the city of Kilkenny. I changed the course of the river Blackwater for Mr. Cliff, of Wexford, and designed Augustine house for Thomas Brown, esq., cousin to Brown the banker, of Baltimore; with many other extensive works, occupying a successful practice of twenty years, until the plague and famine of '48, when I left my native country to join my numerous relatives, long settled in the United States. In 1849 I arrived in New York. I had an introduction to Judge Edmunds, of the supreme court, inspector general of prisons, who induced me to compete for a premium advertised by the ten governors for the best plan for the penitentiary workhouse on Blackwell's Island. I presented a design and plan in six weeks after my arrival, and won the premium, with eighteen distinguished architects my competitors. In a few months after won the advertised premium for the Baltimore house of refuge for juvenile delinquents; also, the New York new city hospital, and for the emigrant hospital in New York; also, for different churches—Dr. Sunderland's on 4½-street, Washington, and the great Catholic cathedral at St. John's, New Brunswick. I also obtained the advertised premium for the approved plans for the University of the South, to be erected on Cumberland mountain, in Tennessee, (just before the war commenced,) competing plans being presented from every city of note in this country, north and south. Among my competitors were General Rosecrans and Mr. Rogers, supervising architect of the treasury department. In 1850 I presented my first design for the Capitol extension, in answer to a public advertisement, which design was partly used, and which obtained an equal proportion of the advertised premium, with four others—Mr. Walter not being among them, as his plans were marked rejected, and were quite different from any of the plans afterwards used.

In 1853 I furnished to General Meigs, for the use of the government, my

second or modified design, prepared in 1851 at the suggestion of President Fillmore, with verbal and printed instructions, detailing the system of ventilation which I recommended. These papers and explanations were used by General Meigs in his report, which was endorsed by Professors Bache and Henry. I acted as General Morton's chief civil engineer on the aqueduct works, and designed a new jail, penitentiary, and house of correction for juvenile delinquents for the District of Columbia. I also designed plans for new law court buildings and post office for the city of New York, and lately furnished the Spanish government, through their Washington minister, the plans for the great national exhibition building to be erected at Madrid. I completed two works on architecture, one published in Europe, "The Ancient Church Edifices of England," the other, "Anderson's American Villa Architecture," published in New York in 1853. I have also been professor of architecture and civil engineering in two different colleges, one in Europe and one in America. When an apprentice I accompanied Mr. Hargrave on a professional tour through the principal cities in Europe and investigated their principal buildings. It was in the French theatres, in old Drury lane theatre, and in St. Paul's cathedral that I observed the true system or plan for conveying sound and avoiding reverberations. I had personal knowledge of the failure of Dr. Reid's system for the ventilation of the new houses of Parliament and the Millbank penitentiary. His chimney plan has been avoided in late public structures in England and the fan substituted.

A.

Temperature of the Senate Chamber.

	On the floor.			Adjournment of the Senate.	In the gallery.			Adjournment of the Senate.
	12 m.	3 p. m.			12 m.	3 p. m.		
1865.								
Jan. 18	69	70½	3½ o'clock,	71½	78	73	3 o'clock,	74 degrees.
19	69½	69	4 "	70	81	73	4 "	72 "
23	70	71	4½ "	69	78	72	4½ "	70½ "
24	69½	70	4½ "	70½	78	72	4½ "	71 "
25	69	70½	4.5 "	71	82	75	4.5 "	74½ "
26	69½	72	4.20 "	70	82	73½	4.20 "	72 "
27	68½	71	4½ "	71½	81	74	4½ "	71½ "
28	66½	70	4.25 "	70½	79½	73	4.25 "	72 "

B.

Temperature of the Senate Chamber.

	12 o'clock, m.	3 o'clock, p. m.	Adjourned.
1865.			
Jan. 18	70½ degrees.	72 degrees.	3½ o'clock, 72½ degrees.
19	71 "	71½ "	4 " 73 "
23	72 "	72 "	4½ " 72 "
24	72 "	73 "	4½ " 72 "
25	72 "	73 "	4.5 " 73½ "
26	72 "	73 "	4.20 " 72½ "
27	70 "	74 "	4½ " 73 "
28	68 "	72 "	4.25 " 72½ "

MOISTURE OF AIR.

Dr. Youmans represents the capacity of air for moisture by a diagram. Assuming the capacity of air for moisture at 100 degrees of temperature to be represented by the number 100, then its capacity at 60 degrees would be about 31, and at 32 degrees 12½. (Sec. 308.)

Porter's chemistry represents the capacity of a cubic yard of air for moisture at different temperatures to be as follows:

At 50 degrees, ½ cubic inch vapor of water.					
75	do	1	do	do.	
100	do	2	do	do.	

The American Agriculturist gives the following statement as to the absorbing power of air in a room 12 by 15 by 9 feet, containing 1,620 cubic feet, regard being had to temperature:

At 32 degrees, absorption 3,807 grs. = ½ pt. vapor of water.					
50	do	do	6,869 grs.	= 1 pt.	do.
70	do	do	12,863 grs.	= 2 pts.	do.
100	do	do	30,975 grs.	= 5 pts.	do.

The capacity of one cubic foot of air for moisture, by weight, at different temperatures is as follows:

0° zero,	18 grains vapor of water.	
32 degrees, 2.35	do	do.
40 do	3.06	do do.
50 do	4.24	do do.
60 do	5.82	do do.
70 do	7.94	do do.
80 do	10.73	do do.
90 do	14.38	do do.
100 do	19.12	do do.

Air at 32 degrees will contain 1/100 of its weight of vapor.			
59	do	1/80	do.
86	do	1/40	do.
113	do	1/20	do.
140	do	1/10	do.

(Yonmans, sec. 286.)

JOHN. A. ROWLAND.

NEW YORK CITY HOSPITAL, BROADWAY.

SIR: In answer to your inquiries, I have the pleasure to state that there are upright air shafts, each about four feet in the clear, erected at each end of a longitudinal horizontal passage or tunnel under the basement floor, through which the fresh air is supplied. This air is admitted into a series of small air chambers, through valves 10 by 14, which are connected with the main fresh air tunnel. In these small air chambers the air is rarefied by means of steam pipes in coils, and from these small air chambers the rarefied air ascends to the different wards through flues in the walls opening into the wards, by means of the registers placed about two feet from the floors.

The ventilating flues, or flues for taking off the impure air, are in the side walls of the different wards, situated close to the floors, and also about ten inches from the ceilings, which flues are connected with the foul air chambers at the top of the building, into which they discharge their foul air, the chambers being

kept constantly heated by a coil of steam pipe placed in the top, and immediately under these openings above the roof.

This is a self-acting system, using steam only without the use of a fan.

B. F. McALHATTEN,

107½ Avenue D, New York.

Hon. CHAS. R. BUCKALEW.

ARCHITECT'S OFFICE, 54 EXCHANGE PLACE,

New York, December 5, 1864.

SIR: In compliance with your desire, I have much pleasure in furnishing you with the information you require, as to the system which has been adopted for ventilating the new emigrant hospital, now in course of erection on Ward's island.

1st. The building is under the control of the commissioners of emigration.

2d. The air which is supplied to the different wards is brought through an elevated shaft, placed at some distance from the building.

3d. The air is collected in an air-chamber, under the level of the basement floor, from whence it is forced, by the action of a fan wheel, through large brick ducts, which run under each building; from thence it is taken, through hollow iron shafts, to the different wards in controllable quantities.

4th. The impure air is withdrawn by means of flues in the walls, situated in the piers behind the patients' beds, in each ward.

5th. This impure air is attached to the great upper foul-air shaft, which discharges its contents at a height over the roofs. The fan is only used for the purpose of securing a proper quantity of pure air at all seasons to the wards, independent of the windows.

Very respectfully, your obedient servant,

JOHN W. RITCH.

Hon. CHAS. R. BUCKALEW,

United States Senate.

RESOLUTION.

IN THE SENATE OF THE UNITED STATES,

May 9, 1864.

Resolved by the Senate, (the House of Representatives concurring,) That a joint select committee, to consist of three members on the part of each House, be appointed by the respective presiding officers, to examine into the present condition of the Senate chamber and hall of the House of Representatives, as regards the lighting, heating, ventilation, and hearing, and the defects and disadvantages existing in the same. That the said committee obtain from Charles F. Anderson, architect, a statement of the principles upon which he proposes to regulate those particulars, with a view to their improvement, so as to secure the better adaptation of those halls to the purposes of legislation, and the preservation of the health of those occupying them; and that the committee also obtain a statement or estimate of the expense that will attend the necessary alterations, and the probable time that will be required for making them; and the said committee shall be authorized to report, by bill or otherwise, at the present or next regular session of Congress.

Attest:

J. W. FORNEY,

Secretary.

IN THE HOUSE OF REPRESENTATIVES U. S.,

May 10, 1864.

Resolved, That the House of Representatives concur in the foregoing resolution of the Senate, providing for the appointment of a joint select committee to examine into the present condition of the Senate chamber and hall of the House of Representatives.

Ordered, That Mr. Morrill, Mr. Smithers, and Mr. English be appointed the said committee on the part of the House.

Attest :

EWD. McPHERSON, *Clerk*.

IN THE SENATE OF THE UNITED STATES.

May 10, 1865.

The President *pro tempore* appointed Mr. Buckalew, Mr. Howard, and Mr. Henderson the committee on the part of the Senate, under the foregoing resolution.

Attest :

J. W. FORNEY,

Secretary.

IN THE HOUSE OF REPRESENTATIVES,

January 5, 1865.

The Speaker appointed Mr. Pike a member of the joint committee (select) on ventilation, in place of Mr. Morrill, excused.

Attest :

EDWARD McPHERSON,

Clerk.

By CLINTON LLOYD,

Chief Clerk.

Appropriation in second section of miscellaneous appropriation act of July 2, 1864. Laws of 1863-'4, page 362.

For plans and detailed drawings for proposed changes in the Capitol wings, to secure improvements in the ventilation, heating, and acoustics of the halls of Congress, the sum of fifteen hundred dollars, or so much thereof as may be necessary; the said outlay to be authorized and approved by the joint select committee of the two Houses upon the ventilation &c., of said halls, and to be paid out of the aforesaid appropriation for the Capitol extension.

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IN THE SENATE OF THE UNITED STATES.

FEBRUARY 21, 1865.—Ordered to be printed.

FEBRUARY 23, 1865.—Ordered that 1,000 additional copies be printed—500 for the use of the Senate and 500 for the use of the Smithsonian Institution.

Mr. FOOT submitted the following

REPORT.

Resolved by the Senate, (the House of Representatives concurring,) That the Committee on Public Buildings and Grounds of the Senate, jointly with the Committee on Public Buildings and Grounds of the House, be, and they are hereby, directed to inquire into the origin of the fire by which the Smithsonian Institution buildings, and the valuable deposits therein, were, on Tuesday, the 24th of January, in whole or in part destroyed; the approximate loss to the government and to private persons; the means necessary to preserve the remaining portions of said building and its contents from further injury; and such other facts in connexion therewith as may be of public interest, and to report by bill or otherwise.

The joint committee of the Senate and House of Representatives on public buildings and grounds, to which was referred the above resolution, respectfully report :

That they visited the building, inquired into the origin of the fire, the character and extent of the loss sustained, and requested the regents, through the secretary, to furnish a written report on the subject of investigation. In accordance with this request the following report was presented :

REPORT OF THE SPECIAL COMMITTEE OF THE BOARD OF REGENTS OF THE
SMITHSONIAN INSTITUTION RELATIVE TO THE FIRE.

The special committee appointed by the board at its meeting on January 28, 1865, to inquire into the origin of the fire at the Smithsonian Institution, to ascertain the extent and character of the loss sustained, and to make suggestions as to what measures should be adopted for the repair and improvement of the building, respectfully report that they have performed the duty assigned them, so far as the time and their means of information would permit.

1.—THE ORIGIN OF THE FIRE.

The testimony has been taken of all persons connected with the establishment that had any knowledge of the occurrence, and a written account of the whole is herewith submitted; also a report from Colonel B. S. Alexander, United States army, who superintended the fire proofing of the main building, of his examination of the flues connected with the accident.

It is evident, from the concurrent testimony thus obtained, that the fire commenced in the southwest part of the roof of the main building in the wood-work immediately under the slate covering, and that it was kindled by the heated air or sparks from a stove which had been temporarily placed in the

room immediately below. The pipe of this stove had been inserted, by mistake, into a brick furring-space resembling a flue, which opened under the rafters instead of into the chimney flue, within a few inches of the latter. By whom the hole into which the pipe was inserted was originally made is not known, but it is remembered that a stove-pipe was put into it as far back as 1854, at the time of the exhibition held by the Mechanics' Institute in the building. No fire, however, had been in this room for ten years previous to Monday, 15th January, when the mechanist and carpenter of the institution were engaged, with several other of the employes, in rearranging the pictures of the gallery, the weather at the time being unusually cold. These persons, for temporary convenience, set up the stove above mentioned, intending to remove it as soon as their task was finished. A coal fire, kindled with wood, had been burning in this stove for eight days previous to the conflagration, yet it appears from the testimony that no evidence of combustion was observed by a person who passed through the loft six hours before the breaking out of the flames. It is probable, however, that the wood had been undergoing a process of charring for several days.

On account of the very expensive style of architecture selected for the building, and the limited means at the command of the board, the plan had been at first adopted of finishing the interior of the whole edifice with wood and plaster. A large portion, however, of the interior woodwork of the main building, after the roof and exterior had been finished, gave way and fell; whereupon the regents ordered the removal of the woodwork and its place to be supplied with incombustible materials. Thus the main building was rendered fire-proof, with the exception of the supports of the roof, which being covered with slate was assumed to be safe. The only danger of the occurrence of fire was supposed to exist in the two wings and the towers, and to guard against this contingency especial precautions were constantly observed, viz: 1. No smoking was allowed in any part of the building at any time. 2. No lights were allowed to be carried from one part of the building to another except in lanterns. 3. Three coils of large hose were deposited, ready for use, one in the upper story and the other two on the first floor of the building; and there were water-pipes in the basement with faucets. 4. Barrels and buckets, kept constantly filled with water, were placed at different points of the building. 5. The rule was observed of cleaning the flues every autumn before the commencement of fires. 6. A watchman was employed each night, who made every hour the rounds of all the rooms in the building, giving special attention to those in which fire had been kindled during the day, including the apartments occupied by the family of the secretary.

These precautions, however, as it has proved, were of no avail—the fire having occurred at a point where no danger was apprehended, and to which access could with difficulty be obtained.

II.—THE CHARACTER AND EXTENT OF THE LOSS SUSTAINED.

The loss to the institution was as follows:

1. The contents of the secretary's office, consisting of the official, scientific, and miscellaneous correspondence, embracing 35,000 pages of copied letters which had been sent, at least 30,000 of which were the composition of the secretary, and 50,000 pages of letters received by the institution. Here, moreover, were lost the receipts for publications and specimens; reports on various subjects which have been referred to the institution; the records of experiments instituted by the secretary for the government; four manuscripts of original investigations, which had been adopted by the institution for publication; a part of the manuscript material of the report of the secretary for 1864; a large number of papers and scientific notes of the secretary; a series of diaries and memo-

random books, and a duplicate set of account books, prepared during the last twelve years, with great labor, by Mr. Rhees, the chief clerk; also, about one hundred volumes of valuable works kept at hand for constant reference.

2. In the apparatus room, the large collection of scientific instruments, including the donation of the late Dr. Hare.

3. A part of the contents of the regents' room, including the personal effects of Smithson, with the exception of his portrait and library.

4. The contents of the rooms in the towers, including the meteorological instruments, the workshop, containing a lathe and a large number of valuable tools, nearly all the stock on hand of the duplicate copies of the annual reports, and many other public documents and books intended for distribution to libraries, as well as a quantity of stationery, hardware, &c.

5. The wood-cuts of the illustrations contained in the Smithsonian publications.

The loss to other parties was as follows:

1st. The contents of what was called the Picture Gallery, viz: *a.* About two hundred portraits, nearly all of life size, painted and principally owned by Mr. J. M. Stanley, formerly of this city, and now of Detroit, Michigan, and which were on deposit in the institution. *b.* A number of half-size Indian portraits, painted by Mr. King for the government. *c.* A copy, in Carrera marble, of the antique statue known as the "Dying Gladiator," by John Gott, and owned by Mr. J. C. McGuire, of this city.

2. A number of surveying instruments belonging to the government.

3. The clothing, books, and private effects of several of the persons connected with the institution, and of those engaged in scientific studies.

4. The library removed from Beaufort, South Carolina, by the army, and also that of Bishop Johns, from Fairfax Theological Seminary, given in charge to the institution by the Secretary of War for safe-keeping, which libraries were stored in an upper room in the south tower.

Independent of injury to the building, the loss to the institution, as far as it may be estimated and can be restored by money, may be stated at about \$20,000, and to individuals \$26,000, viz: To Mr. J. M. Stanley, \$20,000; Mr. J. C. McGuire, \$1,000; Prof. Joseph Henry, \$1,500; Mr. W. J. Rhees, \$1,200; Mr. W. DeBeust, \$1,300; and all others, \$1,000.

Although the loss which the institution and individuals have sustained is much to be regretted, yet it is a source of consolation that by far the greater part of the valuable contents of the building have escaped without injury. The valuable library of the institution, the most extensive, in regard to the transactions of learned societies and scientific books, in this country; the museum, including the collection of the exploring expedition and those of the institution; the large stock of many thousand duplicate specimens for distribution to all parts of the world; the records of the museum; a large portion of the correspondence relative to natural history; nearly all the records of meteorological observations which have been accumulated during the last fifteen years; the sets of Smithsonian publications (except the annual reports) which have been reserved to supply new institutions, and the stereotype plates of all the works which have been published during the last four or five years, have been saved. All the original vouchers of the payments made by the institution, the ledger in which they were posted, and the daybook from 1858, were also preserved, having been deposited in a safe in the regents' room. The contents of the connecting range between the library and the museum are uninjured; this includes a series of plaster casts and portraits of distinguished men, among the latter a life-size portrait of Guizot, by Healy; an original full-length figure of Washington, by the elder Peale, and also a valuable series of rare engravings illustrative of the history of the art, purchased from the Hon. George P. Marsh.

All the important acts of the regents from the beginning, and an account of

the operations of the institution, having been published from year to year in the several reports to Congress, a continued record of the history of the establishment from the beginning is, therefore, still in existence. As these reports have been widely distributed, they are generally accessible to the public.

The burning of the roof of the building can scarcely in itself be considered a calamity, since it probably would have occurred at some future time when a much larger accumulation of valuable articles might have been destroyed, and since it will now be replaced by one of fire-proof materials. The fire-proofing, as far as it was carried, was well done, and it is to this circumstance that the preservation of the most valuable objects of the establishment is due.

III.—SUGGESTIONS AS TO WHAT SHOULD BE DONE.

There can be no hesitation in adopting the conclusion that steps should be immediately taken not only to repair the injury, but to improve the condition of the building.

1. The main edifice should be provided with a metallic roof.
2. For the wooden conical terminations of the towers should be substituted metallic coverings.
3. All valuable articles belonging to the institution or deposited in it, including the library, should be placed in the main building, which should be cut off from the wings by iron doors.
4. Provision should be made for a thorough heating of the whole building by steam or hot water.
5. Suggestions should be requested from competent architects and engineers as to the work to be done, and those which are adopted should be embodied in working plans and drawings.
6. A building committee of the board should be appointed to have charge of the work.

No very exact estimate can as yet be made as to the cost of the repairs, &c., for it has not been possible, without erecting a scaffolding, to determine whether it will be necessary to take down the high northern tower. Colonel Alexander, of the engineer corps, however, has informed the committee that he thinks \$100,000 will be required to make the necessary repairs and improvements.

The committee cannot conclude without adding that, in their opinion, the occurrence of the fire ought not to be allowed to interfere with the active operations of the institution, on which essentially depends the reputation it has established throughout the world, and its efficiency as an instrument for "the increase and diffusion of knowledge among men." To the support and extension of these operations, therefore, the annual interest from the original fund should, as far as possible, continue as heretofore to be conscientiously applied.

Respectfully submitted :

RICHARD WALLACH,
JOSEPH HENRY,
Special Committee.

WASHINGTON, *February*, 1865.

At a subsequent meeting of the committee, Professor Henry was requested to state his connexion with the institution, to give an account of its objects and operations, the origin of the building, and such other facts as might be of public interest. In conformity with this request he made the following statement :

STATEMENT OF PROFESSOR HENRY.

I have been from the first, now eighteen years, the secretary or executive officer of the Smithsonian Institution; have had charge of all the property and been intrusted with the expenditure of the appropriations, and the general management, under the supervision of the board of regents, of all the operations of the establishment.

Before my election I was requested by one of the regents to give a sketch of what, in accordance with the will of Smithson, I considered should be the plan of organization, and after due consideration of the subject there was not the least shadow of doubt in my mind that the intention of the donor was to found a cosmopolitan institution, the effects of which should not be confined to one city or even to one country, but should be extended to the whole civilized world.

This opinion was shared in whole by Professor Bache, and in part by other members of the board; and I was elected secretary and was induced to accept the office, though with much solicitude as to the result, with the view of assisting in developing and reducing to practice a corresponding plan of organization.

In order to present the inferences and suggestions which flow from the study of the will in a definite form, they were afterwards stated in a series of propositions, given below, which have continued to serve as the basis upon which the operations of the institution have been conducted.

Smithson left his property "*to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men.*"

These are the only words of the testator to serve as a guide to the adoption of a plan for the execution of his benevolent design. They are found, however, when attentively considered, to admit of legitimate deductions sufficiently definite and comprehensive.

"1. The bequest is for the benefit of mankind. The government of the United States is merely a trustee to carry out the design of the testator.

"2. The institution is not a national establishment, as is frequently supposed, but the establishment of an individual, and is to bear and perpetuate his name.

"3. The objects of the institution are, 1st, to increase, and, 2d, to diffuse knowledge among men.

"4. These two objects should not be confounded with one another. The first is to enlarge the existing stock of knowledge by the addition of new truths; and the second, to disseminate knowledge thus increased among men.

"5. The will makes no restriction in favor of any particular kind of knowledge; hence all branches are entitled to a share of attention.

"6. Knowledge can be increased by different methods of facilitating and promoting the discovery of new truths, and can be most extensively diffused among men by means of the press.

"7. To effect the greatest amount of good, the organization should be such as to enable the institution to produce results, in the way of increasing and diffusing knowledge, which cannot be produced either at all or so efficiently by the existing institutions in our country.

"8. The organization should also be such as can be adopted provisionally, can be easily reduced to practice, receive modifications, or be abandoned, in whole or in part, without a sacrifice of the funds.

"9. In order to compensate, in some measure, for the loss of time occasioned by the delay of eight years in establishing the institution, a considerable portion of the interest which has accrued should be added to the principal.

"10. In proportion to the wide field of knowledge to be cultivated, the funds are small. Economy should therefore be consulted in the construction of the building; and not only the first cost of the edifice should be considered, but also the continual expense of keeping it in repair, and of the support of the establishment necessarily connected with it. There should also be but few individuals permanently supported by the institution.

"11. The plan and dimensions of the building should be determined by the plan of the organization, and not the converse.

"12. It should be recollected that mankind in general are to be benefited

by the bequest, and that, therefore, all unnecessary expenditure on local objects would be a perversion of the trust."

The plan proposed in conformity with these propositions, and which especially commended itself to men of science, to which class Smithson belonged, was that of an active, living organization, intended principally to promote the discovery of new truths by instituting original researches, under the direction of suitable persons, in history, antiquities, ethnology, the various branches of physical science, such as astronomy, chemistry, geology, &c., to institute explorations for the purpose of developing the physical geography and natural history of this continent, to establish posts of observations tending to advance in the most direct manner the science of meteorology, &c., &c.

For the diffusion among men of the knowledge thus produced, it was proposed to publish a series of quarto volumes, to be called "Smithsonian Contributions to Knowledge," and to include in these the labors and original researches of inquiring and sagacious minds, which could not otherwise be given to the world, and as promotive of the same end; furthermore, to issue a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not strictly professional, as well as to publish occasionally manuals which might serve to assist observers, and direct attention to special branches of investigation.

This plan, which was probably in the mind of the donor when he gave expression to the few but comprehensive words which indicate the objects of his bequest, has proved eminently successful. Its operations, limited only by the income, are such as to affect the condition of man wherever literature and science are cultivated, while it tends in this country to give an impulse to original thought, which, amidst the strife of politics and the inordinate pursuit of wealth, is, of all things, most desirable.

Although it has since commanded the approval of unprejudiced and reflecting persons generally, it was unfortunately at variance with the preconceived ideas of many influential persons, and was not considered by them as embodying the requirements of Congress in the act of organization.

The plans of organization which had for the most part been previously advocated were principally of local influence, or such as merely embraced objects intended for the diffusion of popular knowledge, while they neglected the first and essential requisition of the bequest, viz. the *increase* of knowledge, or, in other words, the advance of science through original researches, or the discovery and promulgation of new truths. Before my election and the presentation of the views above recited, a plan had been reported by a special committee of the regents, confining the operations of the institution principally to a library, a museum, a gallery of art, and other local objects in connexion with a system by which itinerant lecturers were to be employed to give instruction in different parts of the country; the general style of the building had also in effect been decided upon.

It was vainly urged that a large and expensive building was not necessary to carry out the object proposed in the will of Smithson, and that, even were it concluded to erect eventually a large edifice, it would be more prudent to commence with a small structure, to which additions might from time to time be made, as the wants of the institution should require. These remonstrances were met by the objection that the law of Congress directed provision to be made on a *liberal scale* for the accommodation of the museum of the government then at the Patent Office. The influence of the authorities of the city, of the press, and of all persons who were pecuniarily interested directly or indirectly in contracts, or otherwise, and the fascination of the architectural display, as presented on paper, was too strong to be resisted, and the plan of the present building was finally adopted.

Two very grave errors were thereby committed: 1st, the plan was but little

adapted to the uses to which the building was to be applied ; 2d, the style of architecture required a far greater expenditure than the amount to which the cost of the building was limited. In proportion to the extent of the exterior walls the enclosed space is exceedingly small ; the buttresses, turrets, and towers, while they add very little to the accommodation of the building, very much increased the cost. To have constructed the building in a substantial and durable manner, in strict conformity with the Lombard style of architecture which was adopted, would have required an expenditure of at least double the amount of the sum appropriated for the purpose. It was therefore, necessary in the very inauguration of an enterprise intended for the advancement of *truth* to have recourse to a false presentation of groined arches and fretted roofs of stone by means of wood, stucco, and paint. The two wings and the two connecting ranges were completed in this manner. The main building, which is 200 feet long and 50 wide, embellished with six towers, was also in process of completion, the framing of the interior having been finished, when the underpinning gave way and the whole of the woodwork was precipitated to the ground. After the occurrence of this accident a commission of architects, appointed to examine the plans and construction of the building, reported that the exterior walls were well built, both in regard to construction and materials, but that the plan of finishing the interior in wood and stucco was improper for an edifice intended to contain valuable articles ; it was therefore recommended that fire-proof materials should be employed for the portions of the work which remained to be constructed. In conformity with this recommendation the interior of the main building was completed in iron, stone, and brick, with the exception of the roof, which, being covered with slate and not supposed to be exposed to danger from fire, was suffered to remain. This change in the mode of construction added of course materially to the cost of the building, which, originally estimated at \$210,000, has in reality amounted to upwards of \$300,000.

In order to meet the large expenditure on the building ; to provide for the support of the establishment necessarily connected with it, and to leave the greater part of the interest of the original bequest free to be applied to its more legitimate objects, it was resolved to create an extra fund, and for this purpose the following course was pursued :

1. The building was erected in parts, and its different portions gradually brought into requisition, its completion being thus delayed for a number of years, at first limited to five, but extended after the accident before mentioned to nine years.

2. The sum appropriated to the building, furniture, and grounds, viz. \$250,000, being mainly the interest which had accrued previous to the organization, was invested in United States treasury stock, bearing interest.

3. The plan of organization was gradually developed, and, instead of expending upon it from the first the whole interest of the original bequest, a part of this was also invested in treasury bonds.

This plan was so successfully and steadily carried out, that at the commencement of the war, after paying for the building, accumulating a very valuable library, establishing and supporting a large museum, and carrying on all the active operations of the establishment, an extra fund had been created amounting to \$140,000. In order to secure this from the contingencies of any future expenditure on buildings or loss from hazardous investment, a petition was preferred to Congress to take it from the care of the regents and deposit it with the original principal in the treasury of the United States, subject to the same restriction, viz. that the interest alone could be expended. This petition not having been acted upon, the regents deemed it expedient to invest the money in such State stocks as were then considered most eligible.

The following investments were accordingly made :

In Indiana	5 per cent. stock.....	\$75,000
" Virginia	6 " " "	53,500
" Tennessee	6 " " "	12,000
" Georgia	6 " " "	500
" Washington	6 " " "	100
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		141,100
		<hr/>

With the assistance of the income from this additional fund, the institution, when its plans were fully developed, was not only enabled to support a large local establishment, but to produce results of great importance in the way of increasing and diffusing knowledge—results which have attracted the attention of the civilized world, and convinced, it is believed, those who were most skeptical as to the success of the plan of active operations, of its practicability, its usefulness, and its strict conformity to the terms of the bequest.

In the unhappy distractions of our country, no income has been received since the beginning of the war from the southern stocks, and this, with the great increase of prices, has materially interfered with the extent of the operations of the institution.

In view of the great expenditures of the government on account of the war, the institution did not at first urge, as it might reasonably have done, the request to have the annual income from the original bequest paid in specie, as all the other funded debts of the United States are paid. But now that a large outlay will be required to repair the damages caused by the fire, the necessity can scarcely be evaded of urging this measure upon the Secretary of the Treasury or upon Congress. That this claim of the institution is a just one is the unanimous opinion of the board of regents, and among them of Chief Justice Chase. The institution has always studiously avoided asking Congress for any appropriation on its own account, nor does it now, while burdened with the cost of the repairs of the accident, ask for an appropriation even to assist in protecting the property of the United States stored in its building. Its simple request is to receive its annual dues in the same kind of payment which is made to other similar creditors of the government.

It is to be regretted that the law of Congress organizing the institution directed that provision should be made on a large scale for a library and museum, since if all the income of the bequest were applied to either, it would be scarcely sufficient to establish and support one of the first class. A conscientious endeavor, however, has been made to harmonize the whole scheme; and notwithstanding the inauspicious circumstances which attended the commencement of the institution, as before stated, and the difficulties with which it has had to contend from time to time, the results it has produced have been such as to commend it to the public generally throughout our own country, and to make it favorably known to the cultivators of science wherever found. It has identified itself with the history of almost every branch of knowledge which receives attention at the present day, and its transactions and proceedings are constantly referred to as authoritative on all subjects to which they pertain. With no desire to exaggerate its importance or advantages, the fact may be satisfactorily cited that the recognition of its services in behalf of science exists in the contemporary works of all languages, and that its publications are found wherever letters are cultivated, and its specimens in all the principal museums of the world. If it was the desire of the founder to perpetuate the memory of his liberality, that desire has been thus fully gratified, nor is the memorial of his enlightened and comprehensive benevolence limited as to place or time, since

it is constantly renewed with the dissemination of each publication which bears his name.

The following brief history of the labors of the institution up to the present time will not only serve to show what it has done, but also to illustrate the capability of the plan of active operations for producing important results in the way of advancing and diffusing knowledge among men.

ACTIVE OPERATIONS.

Publications. The Smithsonian Institution has established three classes of publications, in which are contained the articles hereafter to be mentioned. These are as follows :

1. A quarto series, entitled "Smithsonian Contributions to Knowledge," issued in volumes, each embracing one or more separate articles. Of these the fourteenth is nearly through the press.

2. An octavo series, entitled "Smithsonian Miscellaneous Collections," which in the aggregate makes six large volumes.

3. Another octavo series, consisting of the annual reports of the institution to Congress, called "Smithsonian Reports," of which eleven volumes have been published.

The Smithsonian Contributions to Knowledge include memoirs embracing the records of extended original investigations and researches resulting in what are believed to be new truths, and constituting positive additions to the sum of human knowledge.

The series of Smithsonian Miscellaneous Collections contains reports on the present state of our knowledge of particular branches of science ; instructions for collecting and digesting facts and materials for research ; lists and synopses of species of the organic and inorganic world ; museum catalogues ; reports of explorations ; aids to bibliographical investigations, etc., generally prepared at the express request of the institution, and at its expense.

The Annual Reports include the official reports of the secretary to the board of regents of the operations and condition of the institution ; the reports of committees of the board ; abstracts of lectures delivered before the institution ; extracts from correspondence ; original or translated articles relating to the history and progress of science, etc.

The following rules have been observed in the distribution of the first and second series :

1. They are presented to all learned societies of the first class which publish transactions, and give copies of these, in exchange to the institution.

2. To all foreign libraries of the first class, provided they give in exchange their catalogues and other publications, or an equivalent, from their duplicate volumes.

3. To all the colleges in actual operation in this country, provided they furnish, in return, meteorological observations, catalogues of their libraries and of their students, and all other publications issued by them relative to their organization and history.

4. To all States and Territories, provided they give, in return, copies of all documents published under their authority.

5. To all incorporated public libraries in this country, not included in any of the foregoing classes, now containing 10,000 volumes ; and to smaller libraries, where a whole State or large district would be otherwise unsupplied.

Institutions devoted exclusively to the promotion of particular branches of knowledge receive such articles published by the institution as relate to their objects. Portions of the series are also given to institutions of lesser grade not entitled, under the above rules, to the full series, and also to the meteorological correspondents of the institution.

The reports are of a more popular character, and are presented :

1. To all the meteorological observers and other collaborators of the institution.

2. To donors to its library or museum.

3. To colleges and other educational establishments.

4. To public libraries and literary and scientific societies.

5. To teachers or individuals who are engaged in special studies, and who make direct application for them.

Besides the works which have been published entirely at the expense of the institution, aid has been furnished by subscription for copies to be distributed to foreign libraries of a number of works which fall within the class adopted by the programme. The principal works of this kind for which subscriptions have been made are as follows : Agassiz's Contributions to Natural History, Gould's Astronomical Journal, Shea's American Linguistics, Runkle's Mathematical Monthly, Deane's Fossil Footprints, Tuomey & Holmes' Fossils of South Carolina, Peirce's Analytic Mechanics.

Meteorology.—The investigation of all questions relative to meteorology has been an object to which the institution has devoted special attention, and one of its first efforts was to organize a voluntary system of observation, which should extend as widely as possible over the whole of the North American continent. It induced a skilful artisan, under its direction, to commence the manufacture of carefully compared and accurately graduated instruments, now generally known as the Smithsonian standards. It prepared and furnished a series of instructions for the use of the instruments and the observations of meteorological phenomena ; also three series of blank forms as registers.

It next organized a body of intelligent observers, and in a comparatively short time brought the system into practical operation ; each year the number of observers increased, and where one ceased his connexion with the enterprise, several came forward to supply his place. By an arrangement with the surgeon general of the army, the observations made at the United States military posts in different parts of the country, and also the system which had previously been established by the State of New York, were remodelled so as to harmonize with that of the Institution. Gentlemen interested in science residing in the British provinces, and at nearly all the posts of the Hudson's Bay Company, also in Mexico, Central America, the West Indies, and some places in South America, &c., joined in this enterprise ; and, with few exceptions, at the beginning of the war every district of considerable size had in it at least one if not more observers. All these contribute their services without compensation. Their only reward is the satisfaction of co-operating with each other and the institution in the effort to supply data and materials for investigation. Any returns, indeed, which the institution has in its power to make are gladly rendered in a hearty acknowledgment of assistance, and in copies of all the Smithsonian publications likely to be of interest.

Beside the materials obtained directly from the observers of the institution, a large amount of other matter relative to the meteorology of North America has been accumulated ; such as copies of all the known series of records for long periods which could be obtained ; series which have been compiled during explorations and surveys for the government, those which have been the result of local associations, and of the system of observations established in connexion with the survey of the great lakes, as well as the common school system of Canada, and many thousand notices of the weather at different times and places, collected from newspapers and periodicals.

No other part of the world has offered such facilities for the collection of meteorological data, the system extending over so large a portion of the earth's

surface, the observers, with few exceptions, all speaking the same language, and many of them being furnished with full sets of compared standard instruments.

It is to be regretted that this system has been partially interrupted during the war, and that the portion of the income of the Smithsonian fund, which could be devoted to the reduction and discussion of the material collected, has not been adequate to the labor of deducing from so large a body of data all the valuable truths which they are capable of affording. It has had assistance, however, from the agricultural department of the Patent Office, by which the results of five years' observations of all the elements and a series of temperatures for long periods have been prepared for publication.

From all the observations made up to 1860, isothermal charts were constructed presenting much more accurately than had ever been done before, the distribution of temperature over the continent of North America; a series of rain charts, and also a large map exhibiting the regions of original forest, of arable prairie and of desert in the United States, have also been prepared.

The institution has fully established the fact, which was previously indicated in regard to storms, by the investigations of Mr. Espy and others, in relation to the United States, namely, that all such meteorological phenomena, as variations in the pressure of the atmosphere, sudden changes of temperature, either of unusually warm or cold weather, thunder-storms, tornadoes, as well as storms of wind, rain, &c., which occur within the temperate zones, travel from west to east. The simultaneous system of observations established by the institution furnished the means of placing this great law of meteorology in prominent relief, and of first reducing it to practical utility.

As early as 1849 the institution organized a system of telegraphic despatches, by which information was received at Washington of the condition of the weather at distant places in the southwest and northwest, and from this, in accordance with the law before mentioned, it was often enabled to predict, sometimes a day or two in advance, the approach of any larger disturbances of the atmosphere. Subsequently the telegraphic despatches were daily exhibited at the institution on a map of the United States by means of a series of movable cards of different colors, which indicated the meteorological condition at various points, showing at a glance in what parts of the country it might be clear or cloudy, raining or snowing; and by arrows the existing direction of the wind. The returns were also published in one of the evening papers. Unfortunately this enterprise was interrupted, by the cessation of the observations in the southwest, and by the constant use of the telegraph for the purposes of the government.

The advantages possessed by the Smithsonian Institution for investigations of this kind will be evident, when it is recollected that a large portion of its observers are stationed west of Washington, that the phenomena approach it over a large extent of land, and can be critically noted through every part of their passage eastward, while the phenomena which are presented to the meteorologists of Europe traverse in reaching them a wide expanse of ocean, from which only casual observations can be gleaned.

The publications of the institution contain many memoirs which have tended to advance the science of meteorology. Among these may be mentioned the meteorological and physical tables prepared at the expense of the institution by Professor Guyot, and filling a large octavo volume of the miscellaneous collections. No work extant answers the same purpose with the one referred to, which has hence become a general standard of reference, the constant demand for it as well in Europe as America having required the printing of several successive editions.

The results of the reductions for five years previous to 1860 have been published in two volumes of nearly 2,000 quarto pages, containing a mass of materials of great value in determining the average temperature, fall of rain,

barometrical pressure, moisture, direction of the wind, and time of various periodical phenomena relative to plants, animals, &c.

In addition to these large and important volumes, other works have been published by the institution which have had a marked influence on the progress of meteorology. Among these may be mentioned the works of Professor Coffin, on the winds of the northern hemisphere; of Mr. Chappellsmith, on a tornado in Illinois; of Professor Loomis, on a great storm which pervaded both America and Europe; the reduced observations for twenty-eight years of Professor Caswell, at Providence, Rhode Island; of Dr. Smith, for twenty years in Arkansas; of Dr. Kane and Captain McClintock, in the arctic seas; on the heat and light of the sun at different points, by Mr. Meech; on the secular period of the aurora, by Professor Olmsted; the occurrence of auroras in the arctic regions, by Mr. P. Force, &c.

Besides these a series of meteorological essays embodying many of the results obtained from the investigations at the institution has been prepared by the secretary, and been published in the agricultural reports of the Patent Office.

Astronomy.—The institution has advanced the science of astronomy both by its publications and the assistance rendered to observers. To facilitate astronomical observations it prepared and published for six years an annual list of occultations of the principal stars by the moon, and printed and distributed a series of tables for determining the perturbations of the planetary motions, the object of which determination is to facilitate the calculation of the places of the heavenly bodies. These tables have accomplished the desired end, saving to the practical astronomer an immense amount of tedious and monotonous labor.

The name of the institution has been favorably connected with the history of the interesting discovery of the planet Neptune. From a few of the first observations which had been made on this planet Mr. Sears C. Walker calculated its approximate orbit, and by this means tracing its path through its whole revolution of 166 years he was enabled to carry it backward until it fell among a cluster of stars, accurately mapped by Lalande, towards the close of the last century. After minute inspection he was led to conclude that one of the stars which had been observed by Lalande in 1795 was the planet Neptune. He was thus supplied with the amount of its motion for upwards of fifty years, from which he deduced a much more perfect orbit, and was enabled to construct an ephemeris giving the place of the planet for several years in succession. These investigations, so interesting to astronomy and honorable to this country, were prosecuted and published at the expense of the Smithsonian Institution.

To render more generally accessible to practical astronomers in this country the theory of the motion of the heavenly bodies by the celebrated Gauss, the institution shared the expense of publishing a translation of this treatise from the Latin. It furnishes a complete system of formulas for computing the movements of a body in any of the curves belonging to the class of conic sections, and a general method of determining the orbit of a planet or a comet from three observations, as seen from the earth.

For a number of years aid was afforded to the publication of Gould's *American Astronomical Journal*, which rendered good service to the science by making promptly known to foreign observers the results of the labors of their contemporaries in America. It has also reduced and published at its own expense the astronomical observations made by Dr. Kane in the arctic regions, and has now in hand those which were made in the same regions by Dr. Hayes.

Congress having authorized in 1849 an astronomical expedition under Lieutenant Gilliss to the southern hemisphere for the purpose of determining the parallax of the planets, and consequently their distance from the sun by observations on Venus and Mars, accidentally failed to make the appropriation for instru-

ments. This omission was supplied by the institution, which was subsequently indemnified for the expense by the Chilian government.

In the observation of all the large solar eclipses which have happened since the date of its organization, the institution has actively and efficiently co-operated by publishing projections of the phases and times of their occurrence in different parts of America.

Under its auspices, and partly at its expense, an expedition was inaugurated to observe the great eclipse of 1858 in Peru, from which data of value for the improvement of solar and lunar tables were determined, besides facts of interest in regard to the physical constitution of the sun.

Assistance was also rendered to the expeditions under the direction of the Coast Survey to observe the eclipse of July 18, 1860, one of which was sent to Labrador, under the charge of Professor S. Alexander, of New Jersey, and the other to Washington Territory, under that of Lieutenant Gillies.

To these may be added an account of an instrument invented by Rev. T. Hill, president of Harvard College, for the projection of eclipses.

Physics and chemistry.—The institution has fostered these sciences in many different ways; among others, by importing models of the most approved articles of apparatus, and making them known to scientific men through lectures and otherwise.

It has instituted an extensive series of experiments on building materials, particularly in reference to those employed by the government in the construction of the Capitol and other public edifices; also a like series on acoustics, as applied to public halls, and the principles deduced from these practically applied in the construction of a model lecture-room. It has made a very extended series of experiments on different substances employed for light-house illumination, from which has resulted the substitution of another material for sperm oil, and the consequent annual saving of a large amount of money to the government.

In compliance with requests made by different departments of the government, and of Congress, particularly since the war, it has conducted various series of investigations, principally in relation to questions involving mechanical, chemical, and physical principles, and has made reports on subjects of this kind amounting, in the aggregate, to several hundred.

To facilitate researches, a laboratory has been established and kept constantly in working condition, the privilege of using it having been given to various competent persons for experimenting in different branches of physical science. Just now it is occupied by Dr. Wetherill for the purpose of conducting a series of analyses of samples of air from the halls of Congress, &c., from which a report is to be made, under the direction of the institution, on the ventilation of the public buildings of this city.

The most important publications under this head are the researches relative to electric currents, by Professor Secchi; on the explosibility of nitre, by Dr. Hare; on the ammonia-cobalt bases by Drs. Gibbs and Genth, and on astronomical photography, by Dr. Henry Draper.

A valuable report on recent improvements in the chemical arts by Booth & Morfit was published in 1852, and there have been given in the annual reports of the institution a series of translations and articles presenting a view of the progress of physics and chemistry from year to year, since 1853, among which we may particularly notice the translation of Muller on recent contributions to electricity, and the reprint of Powell on Radiant Heat.

Terrestrial magnetism.—The subject of terrestrial magnetism has been prosecuted simultaneously with that of meteorology, and an observatory was erected in the Smithsonian grounds, fitted up with the most approved instruments, and conducted under the joint auspices of the institution and of the Coast Survey.

After remaining in operation for several years the instruments were transferred to Key West, as a remote station where observations were still more desirable. Instruments were also furnished an expedition to Mexico, and used with much success by Mr. Sonntag, whose results were published in the Smithsonian Contributions to Knowledge. Apparatus was also furnished to Dr. Kane, Dr. Hayes, and other explorers, by means of which valuable results were obtained.

Of the more important publications of the institution, which have tended to advance this science, may be mentioned the articles, by Dr. Locke, on the dip and intensity; the elaborate discussion, by Professor Bache, of the magnetic observations made at Girard college from 1841 to 1845; the report on magnetical observations in the arctic seas by Dr. Kane, reduced at the expense of the institution by Mr. C. Schott, and those made in Pennsylvania and adjacent States by Professor Bache, and in Mexico by Mr. Sonntag.

Explorations.—In the deficiency of means for more extended operations, as has been frequently represented in the annual reports, the efforts of the institution in the line of explorations and collections are confined, as strictly as possible, to America; but within this limit there are few regions which have not furnished scope, in some form, to its activity. Arctic America, all the unknown portions of the United States, Mexico, Central and South America, and the West Indies have been laid under contribution for facts and materials by which to advance science.

An eminently useful influence has been exerted by the institution through the aid it has afforded in the organization of the different government explorations by land and by sea. Whether by official representations to the heads of departments, or personal influence with officers and employés, it has secured the engagement of individuals competent to collect facts and specimens; it has instructed persons thus engaged, and others, in the details of observation; it has superintended the preparation, and, in some cases, borne the expense of the necessary outfits; has furnished fresh supplies from time to time to the collectors while in the field; received the collections made, and preserved them for future study, or at once consigned them to the hands of competent persons, both at home and abroad, for investigation; directing the execution of the necessary drawings and engravings for the reports, and finally superintending the printing and even the distribution of any available copies of the completed works to institutions of science. Prior to the establishment of the institution but little had been done by our government in the way of scientific explorations, with the exception of that under Captain Wilkes. But since then nearly every United States expedition, whether a survey for a Pacific railroad route, a boundary line between the United States and regions north or south of it, or within its borders, a wagon-road across the Rocky mountains, or an ordinary topographical exploration, has been influenced and aided more or less, as above stated. A list of the expeditions has been, from time to time, published in the annual reports, and it is sufficient here to say that their total number up to the present time is about fifty.

Besides these, similar explorations have been carried on without any reference to the government, and either entirely or in a great measure at the expense of the institution, and always at its suggestion, or under its direction. Prominent among these may be mentioned the three years' researches in the arctic regions, by Mr. Kennicott, with the co-operation of gentlemen of the Hudson's Bay Company; of Mr. Drexler, in the region of Hudson's bay, and also in the Rocky mountains; of Mr. Coues, in Labrador; of Lieutenant Feilner, in Nebraska and Northern California; of Mr. John Xantus, at Fort Tejon, Cape St. Lucas, and in Western Mexico; of Lieutenant Trowbridge, on the coast of California; of Drs. Cooper and Suckley, in Western America generally; of Drs. Coues and Beers, in Kansas, New Mexico, and Arizona; of Dr. Irwin, in Arizona; of Dr. Hitz, about Laramie Peak; of Lieutenant Couch, in Texas and

Mexico; of G. Wurdeman, Lieutenant Wright, Captain Woodbury, and others, in Florida, and the Gulf of Mexico; of Dr. Sartorius, Professor Sumichrast, Dr. Berendt, in Mexico; Dr. Von Frantz, J. Carniol, in Costa Rica; of Mr. March, in Jamaica; of Mr. Wright, Dr. Gundlach, Professor Poey, in Cuba; Judge Carter, in Bolivia, besides many others.

In addition to the collections which have been received from explorations organized under the direction of the institution, large numbers of duplicate specimens have been presented by the meteorological observers and other Smithsonian collaborators, the whole forming a body of material for the illustration and study of the American continent unequalled by any collection previously made. The results of the explorations, however, as might be inferred, have not been confined to specimens alone, but have furnished information relative to the topography, geology, physical geography, ethnology, and the living fauna of the country and regions visited.

The results have been published by government, the institution, or other parties. The extent and importance of these publications may be seen in the volumes of the reports of the Pacific railroad and Mexican boundary surveys; of the United States astronomical expedition to Chili, under the late lamented Captain Gilliss; of Captain Stansbury's exploration of Utah; of Lieutenant Michler's of the Isthmus of Darien, &c., &c.; in the volumes of the Smithsonian publications, and in the transactions of nearly all the scientific institutions in the United States.

In order to facilitate the operations of collectors a series of directions and circulars have been prepared and widely distributed, for collecting, preserving, and transporting specimens of natural history, and also special instructions as to the collecting of nests, eggs, shells, insects, &c.

Description and distribution of collections and specimens.—The object of making these collections, in conformity with the policy of the institution, was not merely to supply a large museum in Washington with permanent specimens or duplicates for exchange, but to furnish the naturalists of the world with the materials for advancing the science of the natural history of North America, and of facilitating the study of its various branches by supplying museums, both in the United States and in Europe, with sets of type specimens.

In pursuance of this object, full sets of the specimens collected have been submitted to a large number of naturalists, both in this country and abroad, for critical study and description, and it is not too much to say that scarcely a monographic investigation has been conducted for ten years past in any branch of American zoology which has not derived part or the whole of its material from the Smithsonian collections. Duplicates of the specimens, when described, have been made up into series for distribution, always accurately labelled, and are usually types of some published investigation. The average of such distribution has, for the last ten years, been at least ten thousand specimens annually, while the distribution of 1864 amounted to nearly five thousand species and seventeen thousand specimens. In this way all the older museums in this country and Canada have been largely increased, and the foundation for several new establishments of a similar kind has been furnished. To all colleges and academies making special application labelled specimens have also been presented.

This distribution of specimens is very different from the ordinary exchanges conducted between institutions or individuals, which usually involve the return of an equivalent. The question with the Smithsonian Institution is, not what can be had in return, but where a particular specimen or series of specimens can be placed so as best to advance the cause of science, by being most accessible to the largest number of students engaged in original investigations.

Palæontology, geology, physical geography, &c.—Appropriations have been made for investigations of the surface formation of the Connecticut valley by Professor E. Hitchcock, and for the collection of materials for the illustration of the geology and palæontology of particular regions. Appropriation has also been made to Professor Guyot for a barometrical survey of the different parts of the Alleghany mountains, and to other persons for collecting observations on heights, as determined in different parts of the country by the various canal and railway surveys.

The publications on these subjects, besides the papers of Professor Hitchcock on surface geology, are as follows :

A Memoir on *Mosasaurus*, by Dr. R. W. Gibbs.

On the extinct species of the fossil ox and sloth of North America, and on the ancient Fauna of Nebraska, by Dr. Leidy.

On the Physical Geography of the Mississippi Valley, by Charles Ellet.

On the Law of Deposit of Flood Tide, by Admiral Davis.

On the Fluctuations of the level of the great American Lakes, by C. Whitteley.

On the Palæontology of the Upper Missouri, and Check List of miocene cretaceous and jurassic Invertebrata, by F. B. Meek.

A memoir by Dr. Leidy, now in press, on the extinct reptiles of the cretaceous period, will, it is believed, be a valuable manual of reference.

The institution has published a check list of minerals, with their symbols, prepared by Mr. Egleston, with special reference to facilitating the labelling of the Smithsonian minerals and the exchange of specimens, and it may be mentioned that the institution has made an extensive distribution of specimens of building stone employed by the government.

Botany.—This branch of general natural history has been advanced by the institution, not only by means of the publication of the papers of original memoirs, but also by explorations and collections made at the expense of the Smithsonian fund. The most important work which has been published is a large quarto volume, illustrated by expensive colored plates, of the sea plants of the entire American coast. The work was written for the institution by Dr. Harvey, of the university of Dublin, and has been the means of rendering this family of the vegetable kingdom more generally known. The institution has also published several papers on the plants of New Mexico and California, by Dr. Gray, of Cambridge, and Dr. Torrey, of New York.

Duplicates of the specimens described have been presented to institutions at home and abroad. Considerable labor has also been expended in the preparation of an original report on the forest trees of America, by Dr. Gray. This work, however, has been interrupted for some time, but will be resumed, it is expected, during the present year.

General Zoology.—A large part of the collections made by the institution belong to the general class of zoology, intended to advance the study of animal life upon the continent of America.

The ornithology of America has always been a specialty of the Smithsonian Institution, more efforts having been made to perfect its collection in this department than any other. The institution has published the first part of a work by Dr. T. M. Brewer, suitably illustrated, on the distribution and habits of North American birds during the breeding season, with descriptions and figures of their eggs, the materials being derived entirely from the collections of the institution, and mostly made at its special request. This is the first separate work on North American zoology ever prepared. A catalogue of North American birds, prepared by Professor S. F. Baird, has been extensively used at home and abroad in labelling collections.

Professor Baird is now engaged in preparing a revision, or posting up, of our knowledge of North American ornithology to the present date, with the addition of the species of Central and South America and the West Indies. The materials being derived almost entirely from the specimens collected by the institution, which have been increased since the publication of the extensive work on the same subject by Professor Baird in the Pacific railroad report, from 12,000 to 35,000.

The collections which have been made by the institution for the illustration of mammalia have been very extensive, amounting to 6,000 specimens and have not only included many duplicates of every species previously known, but a very large number entirely new to science. A catalogue of North American mammals, chiefly those collected by the institution, prepared by Professor Baird, has been published and distributed to those interested in the study; also a monograph of North American bats, prepared by Dr. Hallen. Materials are now in course of accumulation to complete the account of the classes of mammals of North America which have not been included in the publications of the institution and Pacific railroad reports.

As with all American vertebrata, the collections of reptiles and fishes made by the institution have been very extensive, and numerous monographs or articles have been published relative to them in the Pacific railroad reports and the proceedings of different natural history societies, the institution having published a synopsis of the serpents of North America, and a monograph of the cottoids.

The institution has materially aided the study of the entomology of this country, not only by the collections in that branch but by preparing and publishing a series of works for the purpose of exhibiting the state of knowledge on the subject and facilitating its further advancement. It has published and distributed the following under this head:

Instructions for collecting and preserving insects, and catalogues, synopses, or monographs of the Diptera, Coleoptera, Lepidoptera, and Neuroptera, prepared by the most competent authorities in Europe and America.

It has also in course of preparation works relative to the Hymenoptera, Homoptera, Hemiptera, Orthoptera, &c.

In the preparation of these publications the institution is indebted for gratuitous assistance to Dr. Jno. Leconte, Baron Osten Sacken, and others.

Conchology.—A large collection of specimens of shells was received from the United States exploring expedition, which has been much increased by subsequent additions. All the shells of the west coast of the United States, and those generally collected by the exploring expedition, have been put into the hands of Mr. P. P. Carpenter, of England, the new ones to be described for publication and the duplicates of the whole to be arranged for distribution to museums, colleges, and other establishments. This work is nearly completed, and a large number of partial sets of the shells have been distributed in accordance with the plan just mentioned. The publications on this subject are lists of North American shells, circulars relative to collecting, an elementary introduction to the study of conchology, and an extensive work in two octavo volumes on the bibliography of North American conchology, by W. G. Binney, and a monograph of the corbiculidæ, by Temple Prime. Besides these a number of articles are in the press or in course of preparation.

Microscopy.—Encouragement has been given to this branch of science by importing as samples simple forms of working microscopes, and also by stimulating our native artists to greater exertion in the construction of this instrument, by ordering the best that could be produced. Samples of microscopic organisms have been collected and distributed to observers, and examinations and reports have

been made on a large number of this class of objects sent to the institution. The publications in regard to this subject are a number of papers by Professor Bailey, of West Point, and a very interesting memoir by Dr. Leidy, of Philadelphia, on a fauna and flora within living animals.

Physiology.—No experiments on this subject have been made under the immediate direction of the institution, although it has furnished the materials for investigation by other parties. The publications in regard to it are chemical and physical researches concerning North American vertebrata, by Dr. J. Jones; researches upon the venom of the rattlesnake, with an investigation of the anatomy and physiology of the organs concerned, by Dr. S. W. Mitchell; on the breathing organs of turtles, by Drs. Mitchell and Morehouse; on the anatomy of the nervous system of rana pipiens, by Dr. J. Wyman; and on the medulla oblongata, by Dr. John Dean.

Ethnology and Philology.—One of the earliest efforts on the parts of the institution was directed to the advancement of the science of American ethnology. Its first publication as well as introductory volume to the series of Smithsonian Contributions to Knowledge, being the work of Squier and Davis, on the ancient monuments of the Mississippi valley, remains the standard treatise on this subject. This was followed by a similar work on the antiquities of New York, by Mr. Squier; and those of Wisconsin, by Mr. Lapham of Ohio; and of Lake Superior, by Mr. Whittlesey; a memoir on some antiquities of Mexico, by Brantz Mayer; and a general introduction to the whole subject of American archaeology, by Mr. Haven, besides many articles of less extent in one or another of the Smithsonian series. Several pamphlets of instructions for making observations and collections in this science have also been issued.

In the department of philology, also, the institution has evinced its zeal and activity by the publication, among others, of the elaborate work on the Dakota language, by Mr. Riggs; that on the Yoruba language, by Mr. Bowen; and that on the Chinook jargon, by Mr. Turner and Mr. Gibbs. To Mr. Shea, of New York, who is engaged in the preparation of a library of American languages, annual appropriations from the funds of the institution have been made in furtherance of the publication of linguistic memoirs furnished by its correspondents.

Systematic efforts have been directed by the institution to the collection of as perfect a series as possible of the specimens of American antiquities, and of those illustrative of the habits of the modern native tribes. Already an extensive collection has been accumulated, and the preparation and distribution of a series of colored casts of the more interesting specimens of aboriginal art have been commenced. The former picture gallery had just been fitted up with cases two hundred feet in length, for the reception of these, when the disastrous fire occurred, which destroyed the upper part of the center building; fortunately, however, before any of these specimens had been placed in the room.

Correspondence.—The institution has constantly received a large number of communications, asking information on a variety of subjects, particularly in regard to the solution of scientific questions, the names and characters of objects of natural history, and the analysis of soils, minerals, and other materials which pertain to the industrial resources of the country. Answers have in all cases been given to these inquiries, either directly by the officers of the institution or by reports from the Smithsonian collaborators. A considerable portion of the correspondence burned in the office of the secretary was of this character. The loss in this case is to be regretted, not only on account of the valuable information the letters and answers contained, but also on account of the illustration they afforded of the influence of the institution, and the condition of the public mind at a given time. Every subject connected with science which strongly

attracts popular attention never fails to call forth a large number of inquiries and suggestions.

International exchanges.—To facilitate the direct correspondence between the learned institutions and scientific men of the two worlds, and the free exchange of their publications, has, from the first, been a special object of attainment with the Smithsonian Institution. Year by year its plans for this purpose have been modified and improved, until the system has become as nearly complete and satisfactory as the funds and force at its disposal will allow. At the present day it is the great medium of scientific intercommunication between the new world and the old; its benefits and services being recognized alike by individuals, institutions, and governments. Its parcels pass all the custom-houses without question or interference, while American and foreign lines of transportation, with rare exceptions, vie with each other in the extent of the privileges accorded it. To so great an extent has its sphere of activity been enlarged, that it is no exaggeration to say that a very large proportion of all international exchanges of the kind referred to are now made through its instrumentality. At the present time the institution is prepared to receive, at periods made known through its circulars, any books or pamphlets of scientific, literary, or benevolent character which any institutions or individuals in America may wish to present to a correspondent elsewhere, subject only to the condition of being delivered in Washington free of cost, and of being accompanied by a separate list of the parcels sent. Where any party may have special works to distribute, the institution is always prepared to furnish a list of suitable recipients. In many cases where works of value have been published by the United States or State governments, likely to be of importance to students abroad, application has been made by the institution for copies, in most cases with success. The articles and volumes, when received, are assorted and combined into packages, and these, after being properly addressed and enclosed in boxes, are despatched to the agents of the institution in London, Leipsic, Paris, and Amsterdam. The boxes are there unpacked, and the contents distributed through the proper channels; the returns for these transmissions are received by the same agents, and boxed and forwarded to Washington, from which point the parcels for other parties are sent to their proper destination. All the expense of packing, boxing, agencies, freights, &c., being borne by the institution, with the exception of the local conveyance of single parcels by express or otherwise within the United States.

LOCAL OBJECTS.

Under this head we have classed those parts of the programme which were indicated by Congress, and which do not, as directly as the objects we have already described, contribute to the advance of knowledge. It will be seen, however, that they have been made as far as possible to harmonize with the active operations, and to assist in their progress.

Library.—Although the act of Congress directed that provision should be made for the accommodation of a library, on a liberal scale, it was soon seen, after the organization of the institution, that it would be impossible, from the income which could be devoted to it, to establish a first-class general library. Even had this been practicable, it would still have seemed superfluous to do so in the very vicinity of the miscellaneous library of Congress, which is every year increasing in extent under the liberal appropriations which are annually made for the purchase of books. It was therefore deemed preferable, and more consonant with the purposes of the institution, to form a special library, which might constitute, as it were, a supplement to the library of Congress, and consist, for the most part, of complete sets of the proceedings and transactions of all the learned societies in the world, and of other serials essential for reference by students specially engaged in original scientific research. The efforts of the institution to carry out this plan, which has since been sanctioned by Congress, have been

eminently successful. Principally through exchanges, and occasionally by purchase, a more complete collection of the works above mentioned has been procured than is to be found in any library of the United States or is easily met with even in Europe. The institution has been assisted in making this collection by the liberality of many of the older libraries of the eastern continent, which, on application, have furnished from their duplicates volumes and even whole sets to complete series of works long since out of print, and which, in some cases, could not have been obtained through any other means. The library is also quite rich in monographic or special treatises in the physical and natural sciences, lacking as yet, it is true, some of the more expensive volumes, but still affording the means of prosecuting almost any scientific investigation.

One speciality of the library consists of the large number of maps and charts, obtained by exchange from geographical and hydrographical establishments, &c. This collection is as complete as any in the country.

No effort is spared to render the library of the institution conducive to the advance of science. Two editions of the catalogue of serial works have already been published, and a third is now in press; this will probably fill four hundred octavo pages, and will be completed in the course of the present year; to be followed by a catalogue of the special works.

As in most libraries of special character, and, indeed, in most large public libraries, the public are allowed free access to the library room during office hours, but are not generally permitted to take books away. When, however, any applicant is known to be engaged in the prosecution of original investigations, which promise to advance science, and requires the assistance of books found in the Smithsonian library, they are freely lent, even to the remote portions of the United States. Any losses which may occur by the adoption of this course are more than compensated by the advantages derived from it.

Congress had provided by the law of organization that a copy of all copyright works should be presented to the library of this institution. This, it was supposed, would be the means of securing important additions to the library. It was found, however, in practice, to impose a burden on the funds of the institution for which no adequate compensation accrued; copies of the most valuable works were not presented because there was no penalty imposed for the neglect to comply with the requirement, and the expense of clerk hire in recording and furnishing certificates was greater than the value of the articles received, consisting as they did principally of the sheets of music, labels of patent medicines, novels, and elementary works of instruction. The law was, therefore, on special application, so modified that authors were required in future only to send a copy of their works to the copyright bureau of the Department of the Interior.

A special library of the character above described, consisting of serials, must of necessity constantly increase with the additions made to the series of the existing associations which annually publish their transactions. The Smithsonian library, therefore, comprises a principle of indefinite augmentation, both as regards extent and value; and although this increase will result mainly from the exchanges produced by the active operations, yet additional accommodations will be constantly acquired. Hence it may become a matter of consideration, hereafter, whether, since Congress has appropriated \$160,000 to the enlargement of the accommodation for its own library, it may not be expedient to request that the Smithsonian collection be received and arranged as one of its departments, while the free use and general control of the same shall still be retained by the institution.

Museum.—The same remarks which have been made in regard to the library may, with little modification, be applied to the museum. The portion of the funds of the institution which it is practicable to devote to the museum is not sufficient to support an establishment of this kind worthy of the seat of govern-

ment of the United States. Indeed, it is generally now conceded by those who have critically examined the subject, that the accommodation and perpetual maintenance of a large collection of objects of nature and art intended for popular exhibition or even for educational purposes, ought not to have been imposed upon the Smithsonian fund. It has been seen from the foregoing statement how much can be done in the way of advancing natural history independent of a costly edifice, and the support of a museum in which are to be continually preserved even type specimens. It is true that specimens of this character ought to be preserved as well as collected, but seeing that there are in the country a number of special museums which would gladly become the custodians of these objects, and that the hope is yet confidently entertained that Congress will, in due time, establish a national museum which shall rival those of other countries, it has been thought advisable to restrict the collections which are retained in the Smithsonian museum: First, to that made by the exploring expedition, the care of which Congress has devolved upon the institution; and, second, to such type specimens as are not to be found elsewhere, and which are thought of special interest as illustrating the Smithsonian publications.

The museum has been rendered particularly attractive to the visitors and inhabitants of Washington by the large number of birds and mammals which have been mounted for public exhibition, and in this way it has undoubtedly contributed to the popularity of the institution.

The danger, however, to be guarded against, is the constant tendency to expand the collections, and hence gradually to absorb the income in their support. It should be recollected that the building has borne upon the resources of the institution with a cost of more than \$300,000, and that at least an additional \$100,000 will be necessary to repair the recent damages, and this mainly to render the edifice better adapted for the accommodation of the library and museum.

In connexion with the museum a collection has been formed which may, in the future, constitute a gallery of art, but up to the present time the articles have principally consisted of plaster casts of distinguished individuals, and a few pictures which have either been presented to the institution or are the property of the government. The only purchase in this line which the institution has made is that from Hon. George P. Marsh, of a series of valuable engravings to illustrate the early history of art.

Lectures.—As a part of the programme of organization finally adopted, courses of lectures were to be delivered, but instead of attempting to furnish popular instruction by this means to all parts of the country, as was at first proposed, the lectures have been confined to the city of Washington; and in order to render them generally useful, synopses of the more important ones have been published in the annual reports. At the commencement of the institution, and before the plan of organization was generally understood, special care was taken to invite as lecturers men of prominence in the line of literature that they might have an opportunity to become familiar with the plan adopted, and in this way many prejudices were removed and much information diffused as to the character of the establishment.

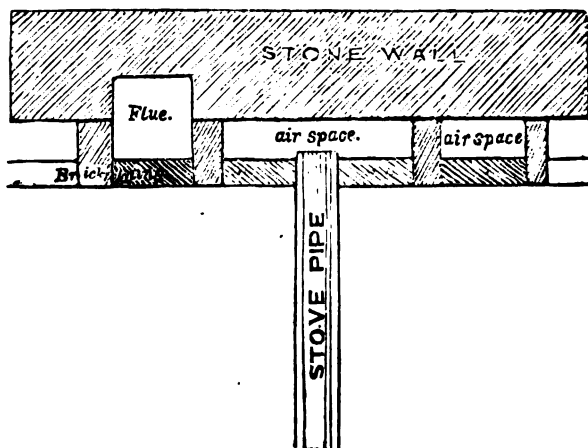
The lectures were commenced before the building was erected, the first course being in 1847, by the Rev. Dr. Scoresby, of England, on the construction and use of the large telescope of Earl Rosse, and have been continued every winter up to the present time. Until within the last four years they were well attended, and no doubt produced a beneficial effect; but since the commencement of the war and the introduction into the city of a large number of sources of amusement, the audience has fallen off, or has been composed in a large degree of persons seeking amusement rather than information. The most important result produced by the lectures is that derived from their publication.

TESTIMONY
RELATIVE TO
THE ORIGIN OF THE FIRE, LOSSES, ETC.

Statement of Colonel B. S. Alexander, United States Army, of the Engineer corps.

WASHINGTON, D. C., January 25, 1865.

MY DEAR SIR: After I left you this morning I made an examination to ascertain, if possible, the cause of the fire yesterday at the Smithsonian building. The cause is manifest. The smoke-pipe, from the stove in the picture gallery, did not enter a flue, as it ought to have done, but was inserted through the brick lining, and discharged the smoke into the general air-space of the building.



The air-space was continued up to the top of the wall, and the smoke and sparks thrown into it from the smoke-pipe were discharged into the space under the roof, close alongside of a tie-beam, and immediately under the boarding. I do not know whether wood or coal was burned in the stove. The sparks from a wood-fire would certainly have set the wooden roof on fire. Coal would not be so dangerous; but even if coal was burned, the fire was, probably, kindled with wood, which would give the sparks; or it may have originated even with a coal fire burning without sparks, by pieces of paper or sweepings having been thrown into the stove.

Very truly, yours,

B. S. ALEXANDER,
Lieutenant Colonel, &c.

Professor JOSEPH HENRY,
Secretary Smithsonian Institution.

Testimony of Spencer F. Baird.

Is assistant secretary of the Smithsonian Institution. Had been in Professor Henry's office at about 2 o'clock p. m. of January 24, and returned through the lecture-room without having his attention attracted by anything unusual. Went into the basement of the main building about 2.30 p. m., and as he entered saw Woltz and De Beust running towards the stairs exclaiming, "The picture gallery is on fire!" Followed them, and on entering the lecture-room saw flame through the registers of the ventilators of the northwest and southwest corners of the room. Went into the picture gallery; saw no appearance of fire or smoke there; found Woltz and De Beust taking down the pictures. Had time to remove a few only from the wall, when a large square of plastering fell from the ceiling, showing a continuous sheet of flame through the hole, and indications of cracking of ceiling elsewhere, and showing that the whole cockloft above was on fire. With the opening thus produced the fire seemed at once to increase in fury, and dense volumes of smoke rolled over the lecture-room skylight, darkening it. Saw there was no probability of saving the roof, and returned to his private office, in the east range, leaving a few persons in the lecture-room. Began to take out of their cases and tie up in bundles the museum catalogues and records, unpublished manuscripts, correspondence, &c., and gave them to persons who had come to offer their services. Told them not to disturb the books, and then went into the document room. Sent out the japanned boxes containing skins of birds, some sixty or more in number, and one case of Cape St. Lucas birds; would not allow the egg cases and others in the room to be disturbed. On returning to office found the book-cases had been broken open, and all the books in that and adjoining room pitched out of the window in the cloister, and another party throwing them from thence outside of the building. Stopped this with aid of a policeman. Found that two cases containing his private collection of birds had been broken open and the birds emptied out and much injured.

After this, spent most of time in museum hall looking after matters there, until it was thought advisable to have the articles brought back into the building, when he superintended their return to the document room.

Did not leave the building from the time the fire broke out until after midnight, and when all the fires had burnt out.

Personal loss consisted of injury, as aforesaid, to his private collection of birds, amounting perhaps to \$150 00 as nearly as can be estimated, some private papers and books missing and others much injured.

As far as now known, no loss or mutilation of any specimens of natural history. Some were wet by the water trickling through the ceiling of the museum, but the damage can be easily repaired. Many labels and stands of specimens, as well as paper trays, soiled or spoiled, and requiring renewal, the latter especially the case with the minerals in the northeast gallery, and in the outer corridor. A few trays of eggs of European birds smashed. Two double-barrelled guns in his office missing, though seen there on the night of the fire by Mr. Bannister and Mr. Elliott.

Believes that a few articles were pilfered by parties present, but is not at present aware of any material loss in this way. Some books were considerably injured by tearing off backs, and scattering sheets.

Know very little of what was going on outside the building. The returning of the property into the east end of the building was accomplished almost entirely by the soldiers.

In addition to the services rendered by the military authorities generally, the firemen, and the police, the institution was very much indebted to the coolness and judgment of Mr. E. S. Smith, superintendent of the Harnden Express

Company, especially for his forethought, inside the museum hall, in preventing unnecessary destruction of the furniture and injury to property. In this he was assisted especially by several of the employes of the Harnden company.

To Mr. Jno. Farrell, Mr. Joseph Tiffany, and other gentlemen, acknowledgments are also due for valuable services rendered in a similar connexion.

Testimony of William J. Rhees.

I have been chief clerk of the Smithsonian Institution for twelve years; have had charge of the accounts, the distribution of the annual reports and documents, the care of the illustrations of the publications, and of the official records and papers generally of the institution. My desk was in the same room with that of the secretary, and this, to be removed as far as possible from interruptions, was on the third floor between the two towers on the north front of the building. To facilitate constant reference, the official correspondence was kept in this room, while the original vouchers for disbursements were kept in an iron safe in the regents' room.

I have always been anxious respecting the safety of the wings of the building from fire, especially as Professor Henry was so particular in his regulations in regard to it for the employes and those who lodged in the building. No one was permitted to smoke in any of the rooms at any time; no candles or lamps were allowed to be carried about, but lanterns were provided, and the watchmen were always instructed to examine the stoves in the rooms at night. The putting up of stoves, cleaning flues, and general direction of fires was in charge of Mr. De Beust.

Several plans had lately been discussed by Professor Henry as to providing additional security against fire, and letters were written last month to Baltimore and Philadelphia to ascertain the price of hose, the desire being to obtain an extra quantity for an abundant supply of water directly to every point of the building. The introduction of large iron water-mains and cocks was also contemplated, and an estimate procured for a fire and burglar alarm-telegraph to be arranged in all parts of the building. No precaution could be taken that was not observed by Professor Henry to guard against accident by fire. The main building, except the roof, which was covered with slate, was considered fire-proof, and not much danger was apprehended in the large towers at the north and south, because the ceilings were so very high, that even if a fire caught it was not thought that it could spread. I had stored, in one of the towers for safe-keeping, a considerable amount of personal property, clothing, trunks, china, books, documents, engravings, and many valuable articles, all of which were lost by the late fire; among these were the manuscript of a work I had been compiling for ten years on the history and statistics of *bequests* to public institutions; a large collection of data relative to public libraries; many rare documents, works, and articles, relative to slavery, free masonry, and the war; a large collection of newspaper cuttings, classified by subjects embracing the principal articles relative to the Smithsonian Institution, science, statistics, libraries, &c., for fifteen years; a very complete collection of the reports and publications of the Young Men's Christian Associations in the United States and Canada.

The loss of such articles as can be replaced by money is about \$1,200.

On Tuesday, January 24, Professor Henry was engaged nearly all morning in dictating to me his annual report. A little after two o'clock, a lady called and wished to examine Stanley's Indian pictures, and the professor accompanied her to the picture gallery. A few minutes afterwards I followed them to the room, having understood that the new arrangement of the pictures had been

completed. After some conversation with the professor as to the appearance of the room, I returned to the office and sat by the stove. It was nearly three o'clock when the professor returned, and he had not resumed work when Mr. C. A. Alexander came in and sat upon the sofa, and took out of his pocket a foreign letter with a translation which he had made. Before he had read it, however, we were all startled by a loud crackling noise immediately over our heads, which I thought, for a moment, was the sliding of ice upon the roof. The noise increasing, Professor Henry said that it must be fire. Mr. Alexander then remarked, "That as he had come up the stairs he smelt smoke like pine burning." We all then rushed to the door opening into the lecture-room, and saw that it was quite dark. Professor Henry exclaimed, "The house is on fire; sound the fire-alarm," and run down stairs. On giving a second look from the door, I perceived a dense smoke over the skylight, and pouring into the lecture-room, and the light of fire in the ventilator, in the southwest corner of the gallery. The noise had by this time greatly increased over our heads, and I saw that no time was to be lost. I went into the office, unlocked a drawer and took out a box, in which were some bonds, &c., deposited with me for safety, rolled it up in paper and carried it down to the basement. I immediately returned to the office, and tried to get in to save some books and papers, but it was so full of dense black smoke that I could not see a foot before me, and becoming choked, I ran to the next floor below and looked into the lecture-room; the room was full of smoke and the ceiling falling in several places. I then got a small ladder out of the wash closet, and assisted some men who had come in to pull down the hose which was kept coiled up near the stairs to the office. I also informed Mr. Force that the meteorological books ought to be removed at once, and advised that they be put out on the roof of the porch, and opened the window for this purpose.

Mr. De Beust, Woltz, and Gant coming in, I told them that we must try to save the letter-books in the secretary's office, and went up with them to direct. We opened the door, but were driven back by the smoke. Mr. De Beust went down stairs and returned with a towel over his face, and went into the office and threw out several armsful of books. The staircase on the west side of the office was now burning rapidly, and fearing that I could not escape if I remained longer, I went down stairs and assisted in taking the meteorological registers out of their cases, and showed men who offered to help what to do. I tried to remove the large barometer, and called for help, as it was too heavy for me to lift, but did not get any. I also carried the "register of reports distributed," and some of the meteorological records, down into the museum. Finding my strength failing, as I had been sick, I went down stairs and through the basement to the outside of the building, to see what was the extent of the fire, and did not return again for an hour or two, when the fire had been pretty much subdued.

Testimony of W. Q. Force.

I have been at the Smithsonian Institution seven years, in charge of the meteorological records and of the meteorological operations of the institution. The records were kept in three rooms on the same floor with the lecture-room, one in the tower on the west and one in the tower on the east of the north door, and the other between these two, all communicating with one another, and none of them fire-proof. My desk was in the east of these three rooms.

A little after one o'clock of the afternoon of the day on which the fire occurred (the 24th of January) Mr. Woltz, the carpenter of the institution, asked me to go into the picture gallery to see the new cases and the new arrangement of the paintings. I went with him, and while on the platform formed by the top of

the cases I noticed that the stove-pipe passed quite close under one of the pictures; and knowing Professor Henry's constant and extreme anxiety about fire, I placed my hand near the pipe to ascertain whether there was heat enough to cause any danger, but it was barely warm. Mr. Woltz said he had found it too cold to remain in the room without fire, and therefore, without asking permission of Professor Henry, brought the stove from the apparatus room to use while hanging the paintings, and intended to take it back as soon as he had finished. He added, that when Professor Henry saw the stove in the room he objected to its being there, but consented to let it remain, on account of the cold, until the pictures were hung.

Soon after I had returned to my room, a gentleman from New York and a lady from Montreal called on me with a letter of introduction, and desired to see the regents' room. I went into it with them, and also on the top of the high tower, and afterwards into the picture gallery. I did not perceive anywhere any signs of fire.

After this a lady was in my room and asked for Professor Henry, who came down from his office and went with her to the picture gallery. After he had returned and gone up to his office again, there was a sound as of some one calling aloud, and Mr. Horan, the watchman, who was in my room, said, "The professor is calling for some one," went out into the lecture-room, and almost immediately ran back and said to me, "The building is on fire." I went into the lecture-room and saw the light of fire in the ventilator near the ceiling, in the southwest corner of the room, and also heard a crackling sound overhead. I did not go into the picture gallery. I supposed the alarm had been communicated to other parts of the building, for several persons had come into the lecture-room. I called to know if the alarm had been given to the fire-telegraph, and not ascertaining, went down stairs to learn, and on my way down met Mr. De Beust coming up, who said that he had given the signal. I went into my own room and met Mr. Rhees, who asked me what ought to be saved first. I thought the papers in the professor's office ought to be saved first of all; but I afterwards learned, that owing to the narrowness of the stairway leading to his room, and the rapid approach of the fire and increase of smoke, access to the room was soon cut off. The hose, which was in a recess and near the ceiling, just inside the door leading to my middle room, opposite the lecture-room door, was then uncoiled and the water turned on, though with difficulty, from being long unused. The principal person performing this service was a policeman.

I remained in my room to prevent the loss of meteorological records by unnecessary removal, but finding the fire still spreading I was about to direct them to be taken out, when Mr. De Beust, who had come in, said that the fire could not reach those rooms on account of the thickness of the walls. I thereupon forbid anything being carried out. But the fire approached rapidly, and in a few minutes it became evident that whatever was to be saved must be removed quickly. Several persons (policemen and others) were in the room, and with their assistance, and that of others who were called up, a large portion of the most valuable records were taken out. I remained in the rooms, directing what was most important to be removed, until driven out by the smoke, and then left by way of a ladder from the north portico, on which stones were then falling from the walls of the building. Two persons (whom I did not know) remained with me to the last, and were very efficient, as were also others, in saving the meteorological records. I was not in any other part of the building during the fire, and therefore do not know what occurred there.

Testimony of William De Beust.

I am a machinist; have been in the institution since 1856, and have had general charge of the repairs to the building, apparatus, the fires, gas, water-pipes, &c.

I removed the large stove from the apparatus room, with the assistance of Mr. Woltz, on this day two weeks ago. The fire had been burning in this stove a week previous to the conflagration. It was so very cold that we could not work there without a fire; the removal was temporary, and I intended to replace the stove as soon as the work was finished. When I came to the institution there were two large stoves, one in the picture gallery and one in the apparatus room. The one in the apparatus room has been used every winter since I came. The one in the picture gallery was afterwards put in the connecting range near the library, and subsequently removed by Professor Henry's direction into the library. There had been fire in the stove in the picture gallery since I came, but not for several years. I was not here when the Mechanics' Institute Fair was held.

When we took the stove into the room we noticed a piece of tin tacked on the wall, and Mr. Woltz pulled it off, and found that it covered a hole. I asked him if the flue appeared to have been used he said that it was black with soot. I was called away, and the pipe was put in the hole, and fire made in the stove. The draft was as good as that anywhere. I perceived no smoke at any time unless the stove door was open; then it did smoke, but I did not suspect anything wrong, as smoke often happens under such conditions. The fire was kindled with refuse stuff left by carpenters and broken pieces of strips; coal was then put on and burned all day. The fire was suffered to go down each night before I went away, and was kindled fresh every morning, sometimes by Woltz and sometimes by myself. I always locked the door and kept the key.

On the morning of the fire, near 9 o'clock, I went up through the lecture-room to the loft, and went to extreme west end of the building, and smelt nothing, not even coal gas. The reason I went was that Mr. Woltz said that there were young pigeons up there, and if I did not go up and get them they would fly away. (A large number of pigeons lived in the loft, coming in and out through openings in the round window in the west end of the main building.) I found the pigeons, but they were too young to remove; returned, walking on the joists of the ceiling over the picture-gallery and lecture room, and went down to picture gallery, and was working on the arrangement of the pictures till noon. At 1 p. m. went to picture gallery again, and Mr. Woltz called me away to fix a sled in the basement. Went to my shop and got tools, took shafts off the carriage and measured for two bolts, and returned to the shop and made them, Mr. Woltz and Roger assisting me, then went to basement to put them in the sled. Mr. Woltz was boring a hole in the runners of the sled when I observed smoke passing by door of basement. I ran out and the rest followed, and I could not see where the smoke came from till I got past the south tower, then saw it coming from western portion of the roof of the main building, very dense smoke. I then ran up to picture gallery to see if the fire was there, and could see none, but could hear a roaring, and observed a cloud of smoke over sky light in lecture-room. Went down and got key of the telegraph box, and worked the alarm apparatus; then gave the key to my son Robert, and told him to sound the alarm again; returned to picture gallery, calling on all I could see for assistance. I got up on the new gallery in picture room and commenced pulling down the pictures on the south side, because that was nearest to the ladder. Henry Horan and James helped me to carry them out of the room. I had a large pile ready to be carried out, but Henry and James did not come back, being probably frightened. About six feet square of ceiling had fallen down, exposing the fire, about ten feet from west and eight feet from south side of the

room. I still remained until another part of the ceiling fell down, no one coming to assist. I slid two of the pictures down the ladder and took them into my room; went back and placed a sentinel (a soldier) at regent's room door, with orders not to admit any one. Went into lower office, thence to door of secretary's office, at request of Mr. Rhees, to try to save the letter-books, but smoke was too dense to go in; returned to lower office, wet a towel at the wash-basin, put it over my face and returned to secretary's office, broke the glass in the book case, and commenced removing letter and other books, taking them out in my arms and dropping them down stairs; when the fire burnt through door from lecture room retreated to lower office, then assisted Mr. Force to take out meteorological records, and carried them into main hall; then went down to my room, found fire burning through trap in centre of room; put a wet carpet beneath the trap, so that when the coals fell down they would go out; returned and took the two pictures into basement, then went to my room again, but smoke was so dense that I could not get in, but put a towel over my face a second time and entered and took out a clock. When I found that the fire was coming down so that nothing could be saved above went to fire-engineer to try to save second story offices.

I have had charge of all flues since I came here in 1856. They were regularly swept every year; swept them by drawing through them, top downwards, green cedar boughs.

I supposed where I put the stovepipe in was a true flue, because there had been a stove there before. The hole was made before I came to the institution, and a stove was in the same place.

Knew that there was a furring out of brick about six inches from wall, because we had the steam electric machine put up on north side of apparatus room, and the men who put it up made a hole into the furring, and another hole had to be made to get into the real flue.

My losses of furniture, tools, &c., as near as I can estimate, amount to about \$1,300.

Testimony of Henry Horan.

I am the watchman of the institution, and have acted as such since 1858. Have just received appointment as special policeman for the protection of the property of the institution, as during the winter a number of petty larcenies have been committed.

I was directed by Professor Henry just before the breaking out of the fire to lock the door of the picture gallery. I left the office of Mr Force for this purpose, and on entering the lecture room I saw the flames shining through the ventilators; rushed back to the office and gave the alarm; then broke into the lecture room gallery, and from there into the cockloft, where I saw nothing but smoke and fire. Unable to do anything there I went down into the picture gallery, and commenced assisting to remove the pictures until the ceiling fell, then was compelled to leave. From here I went to the apparatus room, and helped to remove some of the apparatus, when the ceiling again fell, and I was forced to leave. From here I went to the professor's office, and remained there a few minutes; threw out an armful of books, then ran down to the museum, where I procured a hose; carried it up to the back stairs and played on the flames in the lecture room. From here I went into the east wing, helped to remove a few articles; from here to the museum, and prevented the cases from being broken open and the specimens carried out.

I have been the night watchman of the institution for seven years until last autumn, when on account of my health I was allowed an assistant, who divided

the night with me. I watched through the night from 9 p. m. until 6 a. m. According to directions from Professor Henry, I made the rounds of all the rooms, and especially those in which fire had been, every hour, not even omitting those in the residence of Professor Henry, except the sleeping apartments. I constantly kept twenty-four buckets, and two barrels, filled with water in different parts of the building. In addition to this I had three sections of hose, one for the laboratory and the document room, another for the upper rooms in the east wing, and one for the offices and lecture room. The professor was at the time of the fire in negotiation for the purchase of extra hose.

My orders were not to permit any smoking in the building, not to allow any person to carry a light except in a lantern from one part of the building to another.

To insure a habit of wakefulness when I first came here, I was obliged to make a register on a "tell-tale clock" at the end of every hour.

The greatest fear on my part of danger from fire was in the fish-room under the west wing, in which a large number of alcoholic specimens were stored, and in the document room. To these apartments particular attention was always given. I had no idea that the fire would break out in the roof.

I lost articles at the fire worth at least \$50.

Testimony of T. N. Woltz.

I am a carpenter; have been employed in the institution for about eight year in making cases for specimens, packing boxes, repairs to the building, &c.

Mr. De Beust had the stove put in the picture gallery; he said that it was too cold to work without a fire, and I assisted him to move it in from the apparatus room. Mr. Varden also said he could not work there without a fire. I don't remember when it was put in. I think it was on Monday, a week before the fire. The stove-pipe hole was already there in the wall, and a square piece of tin tacked over it. I removed the tin myself. I said to Mr. De Beust, "I wonder if there is any danger." He replied that he did not think that there was any. I then put my hand in and found soot there, showing that it had been used before as a flue. Roger built the fire, and it drew first rate, and made no smoke in the room. I never saw a particle of smoke during the time the fire was there.

On the morning of the fire I told Mr. DeBeust that there were two pair of pigeons in the loft, in the west end of the main building, and that he had better go up and get them, and this was about 9 o'clock; DeBeust then left and shortly afterwards returned, saying the pigeons were too small. I had been raising pigeons in the loft for about a year, and went up frequently to see about them. I had been up a few days before. I had no key to the door, but always asked Mr. De Beust to go with me, or to let me up.

On Tuesday afternoon I was in the basement fixing shafts on a sled and wanted more light; on opening the south door Mr. De Beust and Roger went with me out of the door, and we saw smoke coming down from the roof. I thought it was the tower on fire. I went up into the lecture room and tried to break in the door to the lecture room gallery, but could not. I then saw fire through the ventilator register in the lecture room and went into the picture gallery and found Mr. De Beust and Henry Horan getting pictures down, and assisted them until the fire came down from the ceiling. I then ran to Mr. Force's office and up to the Secretary's office, to try to get out books.

The chimneys were all swept last fall.

I staid in Mr. Force's room till the last, when the ceiling was falling in, and then got down by a ladder from the portico.

Testimony of Roger Sullivan.

I have been in the institution as laborer for more than twelve years, and make most of the fires, carry coal to the stoves and furnaces, &c. I helped to carry the stove from the apparatus room to the picture gallery on the 16th of January, or this day two weeks ago. I do not know what the stove was taken in there for, but was called by Mr. De Beust to assist him to remove it. After the stove was put up by the direction of Mr. De Beust, I started the fire with dry kindling wood, and then put in two scuttles of coal, which filled it about two-thirds full. The second morning I found that the fire had been already kindled with wood; I put on two buckets of coal; the same thing was repeated every day until the occurrence of the fire, with the exception that I added a little more kindling wood before putting on the coal each morning. The draft was as good as any stove in the building. I think that the hole in the wall was made when the Mechanics' Institute fair was held here; a stove was there at that time and fire in it; I do not recollect of a fire having been there since that time, but I cannot say that there has not been one. I was down in the basement wheeling out ashes in the fire-room on the day of the fire, until Mr. De Beust called me up to his shop in the tower. When we came down from the shop to the basement I saw nothing unusual until Mr. De Beust asked me, "What is that smoke?" On which we all ran out together to the south side of the building; we could see nothing but a dense cloud of smoke; from whence it came we could not tell, until we had got around the south tower, when we saw it issuing from the roof of the main building, over the picture gallery; I then went up into the lecture room and saw fire shining through the register; I stopped there till Mr. De Beust came up and then followed him into the picture gallery; he went up the ladder and commenced taking down the pictures, and handed two of them to me, which I took down to the floor of the museum. Before I left a part of the ceiling fell down, and I did not return because I thought it very dangerous. All the flues which had fire in them were swept in the fall.

Testimony of Theodore N. Gill.

Am assistant in Smithsonian Institution, acting as librarian. On the day of the fire was engaged on the lower floor of the library, when, between 2½ and 3 o'clock p. m., I was summoned to the gallery in a tone of alarm by Miss Jane Turner, an assistant in the library, who expressed the belief that the building must be on fire; went up stairs and saw a large volume of smoke apparently issuing from the rear of the main building; men were also seen running towards the building; could, however, scarcely realize that there could be a fire, on account of the extreme precautionary measures that had been enforced in the Institution; was about hastening towards the east end when I met Mr. George Gibbs, who informed me that the building was on fire; dismissed some visitors from the library and left Miss Turner to lock the door; ran to the east end of the building; men were in the rooms used as offices and studies, removing various articles; assisted in removing some myself; then went, I think, to Professor Henry's house, and afterwards to my sleeping-room; packed in a valise a few articles; after placing the valise by the side of the meteorological records in the main hall of the museum, returned to east end, and learning that the fire would probably be stayed, dismissed a number of men from the rooms, and asked a police officer there present to keep them out; went then to Professor Henry's house and assisted in carrying articles back into the house. I think that it was

after this that I went to the library and found that the door had been forced open. Mr. Gavit, of New York, and a man who stated that he had been requested by Professor Henry to attend to the library, were in the room; stayed there a few minutes; nothing appeared to have been disturbed; obtained a board and nails; secured the former across the doors, and procured a guard to take charge of the room. My losses amount to about \$50.

Testimony of F. B. Meek.

I have been for several years engaged in the preparation of reports for State geological surveys, and in identifying the paleontological collections of the institution, and preparing duplicates for distribution. Have received no salary, but had the use of a working room and sleeping apartment.

At the time the late fire broke out at the Smithsonian Institution (between the hours of two and three o'clock p. m., on the 24th instant) I was in a study and working room adjoining Professor Baird's office, on the second floor of the east wing, between Professor Henry's residence and the main central building. I had completed correcting some proof-sheets which I had placed in Professor Baird's office, and returned to the room where I had read the proof-sheets, and I believe commenced, or was about to commence, working at some drawings, when I noticed that it suddenly grew very dark.* I think I was in the act of going to a window in the southwest corner of the room to look out, thinking the darkness was probably produced by a snow storm, when Professor Baird suddenly opened a door on the north side of the room, opening into a passage leading up into the main building, and hurriedly informed me that the building was on fire. This was the first intimation I had of the fire.

Thinking it was probably some of the wood work recently erected in the picture room that had caught fire, I ran up, hoping we might be able to extinguish it. On passing through the apparatus room into the lecture room I saw the flames in the garret over the west corner of the lecture room through the ventilators. Several persons were running towards the picture room, and as I passed in that direction I observed Professor Henry open an upper door leading from his office into the lecture room, and then hurry back. Almost at the same instant I saw Henry Horan (the watchman of the institution) and some others trying to force open a door leading up into the gallery of the lecture room, nearly under one of the ventilators, through which we could see the flames. Seeing that they could not open the door, I caught hold of it and assisted in pulling at it, but it would not yield, until a man came with a screw-driver, or something of the kind, and forced back the bolt, when the door flew open. Henry Horan, and perhaps others, hurried up the stairway, but I ran back for some buckets of water I knew Professor Henry had caused to be in readiness in case of fire. Some of these were in a lower piazza, near the document room, in the east wing. I picked up two of the buckets and started up with them, but soon discovered that the water in them was frozen apparently solid. I then left the buckets and went back to the lecture room, and seeing that the garret over the lecture room and picture gallery appeared to be all in flames, and knowing of no way to reach that part of the building, I realized that all efforts to extinguish the fire would be useless, and turned my attention to saving movable property.

My own sleeping apartment was a small room under the gallery stairs in the southeast corner of the lecture room. Knowing this part of the building to be

* Caused, as I believe, by a thick cloud of smoke from the burning roof blowing over the eastern part of the building.

in the most immediate danger, I entered my sleeping room and hurriedly threw into my trunk such small articles of clothing, &c. as were lying about, and dragged it out, and down into the piazza in the east wing. I then went back after my bedding, and on reaching the lecture room I noticed the plastering falling from the ceiling, and the flames plainly visible through the openings along the west side of the lecture room. After carrying down my bed-clothes I turned my attention to the property in our study in the east wing, which I thought would be consumed. During the remainder of the fire, or until it became evident that the east wing of the building could be saved, my efforts were directed to saving my own books, manuscripts, drawings, &c., and some valuable books belonging to the Smithsonian library in our study.

Subsequently I assisted in carrying these and other property back into the east wing of the building. My personal losses amount to about \$50.

Testimony of William Stimpson.

Has been employed in scientific work upon the collections of the institution for several years, receiving no regular salary, but being furnished with a room to sleep in and deposit private property. Was absent from the city at the time of the fire, in Chicago, from which place he returned immediately upon reception of the news. Finds that his books and manuscripts had been partly removed from his case in the working room, but had been mostly recovered and returned. His private room, in the northeast tower of the main building, was not injured by fire, but was necessarily broken into in order to gain a passage into the apparatus room from the roof of the range, in which the fire was then raging. After the fire some persons gained access to this room, and injured or destroyed or appropriated nearly all the property there. The wardrobe, trunk, and bureau were broken open, and their contents stolen. The amount of loss is about \$170. A few of the articles were recovered from persons as they were taking them out of the building, but the greater portion was lost.

Testimony of Henry W. Elliott.

I am a temporary assistant in the Secretary's office. At the time of the breaking out of the fire I was in the office of Professor Baird engaged in writing. I suddenly observed that the room was growing very dark; I looked up to the window and saw clouds of smoke passing by. I thought then that the men about the building were burning some rubbish just beneath the window, and was getting up in order to look at them, when Professor Baird came in and said the "picture gallery is on fire!" I then ran up towards it through the apparatus room, and on reaching the lecture room saw the fire shining through the two ventilators just beneath the ceiling on the west wall of the lecture room. I then made a rush for my room in the high tower, and on reaching it found on opening the door that it was black with smoke; unable to breathe in it, I drew in a full breath outside of the door, and entered, rapidly picked up a few clothes which were lying on a chair by my bed, and was then forced to leave. I ran down stairs through the lecture room, which was quite lurid from the reflection of the fire in the ventilators and the large skylight just above the stage; I carried my clothes through the apparatus room, and down through Professor Henry's house, and left them outside of the building with a pile of clothing and furniture. I then returned through the house, and ran for the secretary's office, but on reaching

the lecture room was driven back by the smoke and falling ceiling. I then went down into Professor Baird's room, and carried out several armsful of books and manuscripts, and also the Smithsonian microscope which I left outside. Then I endeavored to return to the building, but was unable to do so on account of the crowd, which was striving to gain admittance around the door. I then ran around the building picking up one thing and another, until it was evident that the wings of the main building and the museum were safe. I then assisted in collecting together the things that were scattered about the floors of Professor Baird's room and the naturalist's room until 10 p. m.

Mr. Bannister and myself together occupied a room in the high tower, which we were not permitted to enter at night with a light not secured in a lantern. We were also forbidden the use of matches in this room.

My personal loss consists of my trunk and most of my under-clothing, and \$125, which was in the trunk, together with my letters, &c.—total \$150.

Statement of H. M. Bannister.

I have been for two winters a temporary assistant in the museum. Was in the gallery of the museum, packing some specimens, when the fire was discovered. Noticed some commotion among the visitors, and that it was suddenly becoming darker; looked out of the window, and saw clouds of smoke driving past. Went to Professor Baird's office, and met Henry Elliott at the door, who told me that the building was on fire, and that I had better save my personal effects. Went up to my room in the high tower, and brought down my trunk and some other things. In going up through the apparatus and lecture rooms I do not remember meeting any one or noticing anything unusual. There was a little smoke and some smell of burning wood on the stairs in the tower, but not much. On my return through the lecture room a portion of the ceiling fell in, showing the fire above. This was the first I had seen of the flames; had thought before that the fire was not very extensive.

I went in and out of the building several times, carrying out books, manuscripts, &c., until it was no longer deemed necessary to do so.

My personal loss of clothing, &c., amounts to about \$35.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 22, 1865.—Ordered to be printed.

Mr. HENDRICKS made the following

R E P O R T .

(To accompany joint resolution S. No. 119.)

The Committee on Naval Affairs, to whom was referred the petitions of Woodruff & Beach and others, and of, William H. Webb, of New York, and of Paul S. Forbes, of New York, and of James R. Eade, of St. Louis, claiming relief for additional cost and expense beyond the contract price for the construction of naval vessels and machinery, have had the same under consideration, and report as follows:

The petitioners are of two classes: first, those who contracted to construct iron gunboats and ships-of-war; and second, those who contracted to build engines for steam vessels-of-war. The vessels contracted to be built, are, first, the *Tecumseh*, by Z. and F. Secor, date of contract, September 15, 1862, to be completed March 15, 1863, price \$460,000. Second, the *Manhattan*, by W. Perine, Z. Secor and P. Secor, date of contract, September 15, to be completed March 15, 1863, price \$460,000. Third, *Canonicus*, by H. Loring, date of contract, September 15, to be completed March 15, 1863, price \$460,000. Fourth, the *Saugus*, by Harlan, Hollingsworth & Co., date of contract, October 13, 1862, to be completed April 13, 1863, price \$460,000. Fifth, the *Tippecanoe*, by Miles Greenwood, date of contract, September 15, 1862, to be completed March 15, 1863, price \$460,000. Sixth, the *Catawba*, by Alexander Swift & Co., date of contract, September 15, 1862, to be completed March 15, 1863, price \$460,000. Seventh, the *Oneota*, by Alexander Swift & Co., date of contract, October 13, 1862, to be completed April 13, 1863, for \$460,000. Eighth, the *Manayunk*, by Albert G. Mason, date of contract, September 15, 1862, to be completed March 15, 1863, for \$460,000. Ninth, the *Mahopac*, by Z. & F. Secor, date of contract, September 15, 1862, to be completed March 15, 1863, for \$460,000. Tenth, the *Comanche*, by Donohue, Ryan & Secor, date of contract, June 20, 1862, to be completed April 20, 1863, for \$565,000. Eleventh, the *Onondaga*, by George W. Quintard, date of contract, May 26, 1862, to be completed November 26, 1862, for \$625,000. Twelfth, the *Dunderberg*, by William H. Webb, date of contract, July 3, 1862, to be completed October 3, 1863, for \$1,250,000. Thirteenth and fourteenth, the *Osage* and *Neosha*, by James B. Eade, date of contract, May 21, 1862, to be completed August 29, 1862, for \$165,000 each. Fifteenth and sixteenth, the *Milwaukie* and *Winnebago*, date of contract, May 27, 1862, to be completed November 13, 1862, at \$313,000 each. Seventeenth, the *Kickapoo*, by G. B. Allen & Co., date of contract, May 27, 1862, to be completed December 3, 1862, for \$318,000. Eighteenth, the *Chickasaw*, by T. G. Gaylord, date of contract, May 26, 1862, to be completed November 12, 1862, for \$320,000. Nineteenth, seven double-end iron

vessels, the Suwanee, Shamokin, Muscootah, Winnepec, Mohongo, Monocacy, and the Ashuelot, at \$171,000, and the engines for each at \$104,000 each, contracts made in June, July, August and October, 1863, and to be completed in March, May, June, July, and September, 1864. Twentieth, seventeen wooden double-end vessels, at \$75,000 each, and the engines at \$48,000 and \$50,000 for each, contracts made in September and October, 1862, and to be completed in January, February, and March, 1863. Twenty-first, the Idaho, by Paul S. Forbes, at \$600,000, contract made May 9, 1863, and to be completed February 9, 1864.

The engines contracted to be built by the petitioners of the second class are: 1st. Five 100-inch geared engines, for the Wampanoag, Ammonoosuc, Neshaming, Poinpanoosuc, and the Madawasca; four of them at \$700,000 each, and one at \$680,000; contracts made in September, October, and November, 1863, and to be completed in July, September, October, and November, 1864. 2d. Twenty 60-inch engines at \$400,000 each; contracts made in October and November, 1863, and to be completed in August, September, October, November, and December, 1864. 3d. Four 46½-inch engines; two at \$580,000 each, and two at \$590,000 each; contracts made in December, 1863, and to be completed in December, 1864, and March, 1865. 4th. Large engine for the Chattanooga at \$600,000; contract made October, 1863, and to be completed January, 1865. 5th. Engine for the Franklin at \$440,000; contract made November, 1863, and to be completed September, 1864. 6th. Twenty-eight engines for wooden double-enders at \$82,000 each; contracts made in August, September, and October, 1862, and one in March, 1863, and to be completed in the spring of 1863, and one in September, 1863.

At the time the contracts for these vessels were made, and the general plans and specifications prepared, the art of building iron-clad ships-of-war was not perfected—it was yet in experiment; so much so that constant modifications of the plans became necessary as the use of completed vessels discovered defects or suggested improvements. So late as the 31st of August, 1863, General Inspector Stimers wrote to Messrs. Secor & Co. that "The building of iron-clad steamers is a novelty in this country, as in any other; it is, therefore, impossible to make a complete general plan, and write complete specifications at one date, which will satisfy all the requirements subsequent experience and study point out, the more especially as the fleet already in service is actually engaged with the enemy and rapidly developing all the weak points of the original structures." During the progress of the work many and material modifications of the plans were adopted, in some cases requiring greater depth in the vessels, and the contractors were required to suspend work until the new plans and specifications could be prepared. As an instance, the following letters from the general inspector to Messrs. Secor & Co. are given:

"GENERAL INSPECTOR'S OFFICE, IRON-CLAD STEAMERS,
"413 Broadway, New York, December 22, 1862.

"GENTLEMEN: You are probably aware that the iron-clad steamers Mahopac, Tecumseh, and Manhattan, now in process of construction by you, are, in their general plan, simply a modification of the Passaic class. That the original design emanated from Captain Ericsson, the inventor of this system, and that this office was established by the government for the purpose of making and issuing to the various builders of the vessels the detailed working drawings. The design of Captain Ericsson contemplated the deck covered with one inch thickness of iron. The deck planking and much of the side armor of pine wood, and all armor plates to be of fifteen sixteenths inch thick each.

"After this plan left the hand of the designer, there was added another inch to the thickness of the deck plating; the pine wood in the deck planks and

side armor was changed to oak; the full thickness of one inch each was demanded for all armor plates; the weight of the boilers was increased fifteen per cent., and in some minor respects weight was added to what was originally intended, until, after having in vain protested against these additions, Captain Ericsson gave notice that he would no longer be responsible for the flotative power of these vessels. I have, therefore, caused the displacement and the weights to be carefully calculated, and, to avoid the necessity of carrying any ballast to balance the vessels, the calculations extended to balancing the weights equally with the displacement. As the result of these investigations, it has been determined to make the following alterations.

"1st. The depth of the vessels will be increased eighteen inches. This will be done by adding a strake of plating between strakes K and L, forward of the after overhang, and between strakes H and N around the stern body. Enclosed I send you a schedule of this plating; at the upper edge of the plating upon the outside there will be an angle iron $6 \times 3\frac{1}{2} \times \frac{1}{2}$ inches in lieu of the one of $4 \times 4 \times \frac{1}{2}$ inches specified originally. In lieu of the short shelves ordered for the ends of the beams to rest upon, there will now be a continuous angle iron $6 \times 3\frac{1}{2} \times \frac{1}{2}$ inches running completely around the vessel upon the inside. The frames will not extend any higher than the original intention, except in cases where they are not yet cut; it would be advisable to permit them to come up to the lower edge of the beam, shelf angle iron, and lower frames of stern body, which are to be lengthened in accordance with the schedule of framing herein enclosed. The armor-shelf and all the armature will be raised eighteen inches, so that the same structure is retained in all this part except in the peculiar manner in which the sheer strake is fastened, for which see drawing soon to be sent you. The same knee-plates or gusset-pieces will be retained as originally specified, but they will require to be cut out at their upper outboard corner, as per drawing.

2d. The 4-foot floors will be increased to 5 feet 6 inches in depth. These will now occur upon frames Nos. 76, 80, 85, 103, 107, 111, 115, 119. 3d. The turret bulkheads will now occur upon frames Nos. 89 and 99. 4th. There will now be two coal-bunker bulkheads; these will occur upon frames Nos. 62 and 74. 5th. The top of boiler-shells will be raised 18 inches. 6th. The upper end of stem and stern-posts will be lengthened 18 inches. 7th. There will be a modification of the lengths of vertical shafts under the turret, on account of the increased depth. The dome over the propeller will not be required. The foregoing are the important changes, of all of which correct drawings will be sent as soon as they can be made.

"You will please make out a statement in detail, showing the expense to yourselves, which will be added to the cost of the vessel, and the length of time which must be added on account of the foregoing enumerated changes.

"You will please give the local inspector an opportunity to judge of the correctness of your estimate, that you may both estimate from the same basis. You will understand, of course, that the government will pay you all expenses incurred on account of these changes, in addition to the price agreed upon in the contract, and to allow you the extra time required on account of them to complete the vessels."

"I am, very respectfully,

"ALBAN C. STIMERS,
General Inspector."

"Messrs. SECOR & Co.,

"68 West street, New York city.

"Approved,

"F. H. GREGORY,
Rear-Admiral, Superintending."

No. 3

"GENERAL INSPECTOR'S OFFICE, IRON-CLAD STEAMERS,
 "256 Canal street, New York, June 16, 1863.

"GENTLEMEN: In consequence of defects developed in the monitor vessels now afloat in actual service at sea and in battle, it has been decided to make the following changes in the iron-clad steamers Mahopac, Tecumseh and Manhattan, now building by you, namely:

"The system of bolting together the plates forming the turret, pilot-house and smoke-pipe, will be changed to a system of riveting with the rivets put through from the inside and riveted on the outside, as shown by the drawing sent you this day by Adams's Express.

"An examination of these drawings will show you that the six inner courses are riveted through and through, instead of the two inner courses as before, and that where rivets pass entirely through all the thicknesses of the third course from the outside, the holes are punched one and a half inch diameter, instead of one and a quarter inch, so that when the riveting is performed the rivet will expand into this larger hole, and thus render it impossible for it to fly either outward or inward when struck by shot.

"There will be a band of wrought iron, fifteen inches wide by five inches thick, secured to the base of the turret, with forty-two inch bolts, as shown.

"This band will be composed of four pieces, but-jointed. The iron must be of the very best quality, especial pains being taken to make it soft, so that when a shot strikes it it may imbed itself into it without breaking it.

"The inspector will, at his discretion, order any piece of this iron to be tested by bending it under a heavy steam hammer three feet in twelve of length; that is, if the supports are twelve feet apart it must be bent down three feet in the middle.

"The gun slides will have one inch clearance between their ends and the inside of the turret; the band supporting them will be made $3\frac{3}{4}$ inches thick, as shown where the slides rest upon it. There will be one-half inch clearance on each side of the gun slide in the notch cut in the band, as shown; but this clearance will be filled in solid with the sliver pieces shown, that they may be readjusted if thrown out of gauge by shot. The plates for lifting the turret, placed over the gun slides, will be changed to forged pieces, as shown by the drawing.

"The gutter around the turret will now be made $7\frac{1}{2}$ inches wide. It will be filled with platted hemp gaskets, on the top of which will be a plate ring three-eighths inch thick by six inches wide, but-jointed, with straps on lower side spiked down to the deck, with five-eighths inch round spikes, seven inches long, placed about two feet apart. In the gutter within the turret there will be several scuppers of at least three inches diameter each, from which pipes will lead to the bilge in such a manner that the water which may come through under the bottom of the turret will be freely carried off without wetting blower belts or other parts which it is desirable should be kept dry.

"The roof of the turret will now have, instead of the railway bars, forged rectangular bars, three inches deep vertically, by four inches wide, spaced one bar every six inches the same as the railway bars were.

"The bars will be kept at the proper distance apart by rectangular blocks of cast-iron placed at the ends of the bars and over the rafters, and kept in their places by flush-headed tap-bolts three-fourths inch diameter screwed into them through the plating, as shown in the drawing.

"These bars must be of the best quality of iron, and from the bars intended for each turret roof there must be tested at least two in the presence of the local inspector, the bars to be tested to be pointed out by him. The test to

consist in bending down the bar laid flatwise under a heavy hammer a distance of two feet when the supports are six feet apart. If there are any cracks in the bar the lot to which it belongs must be condemned.

"The pilot-house will be ten instead of eight inches thick, as before required, and in addition to this there will be a cylinder one-half inch thick—not shown on the drawing—slipped into the inside from the top. This will have vertical joints only; there will be butt and strap with straps on the inside $4\frac{1}{2}$ inches wide, single rivetted with three-fourth rivets spaced four inches apart, countersunk on both sides. This thin cylinder will be cut out where the two-inch thick plates occur over the ends of the cross beam which carries the pilot house, and the lower corners will be secured with four $\frac{3}{4}$ -inch tap bolts screwed into the plating. The peep holes will be carefully made, as shown in the drawing.

"It is found that this is a point of great importance, and many plans have recently been experimented with before the exact form and character was decided upon.

"The cover will now be 3 instead of 2 inches thick, and it will be rivetted down around the periphery, as indicated by the drawing.

"It will be observed that this cover now rests upon the two inner courses of the plating, which are made shorter than the other for that purpose, thus disposing with the ring formerly designed for it to rest upon.

"Around the base of the pilot house upon the turret roof there will be a ring of composition, or of wrought iron, if you can make it of the latter metal with less cost. This ring forms a glacis for the protection of the composition ring which confines the pilot-house.

"You will observe that, according to the drawing sent you, the composition ring, already ordered and perhaps completed, must be put in place before the last two courses are added.

"If you have not yet made this ring, I would prefer you to make it and the glacis ring enough larger in diameter to enable it to be passed over the increased thickness of pilot-house.

"The grating in the smoke pipe will now be placed below the line of the deck, as shown in the drawing.

"Then to retain the same area as before through the bars the pipe must be made larger. To accomplish this, another breadth of plating is added, as shown in the drawing. It will be observed that all the armor plates are now of one height, namely, 6 feet above the deck. The thickness is to be increased from 6 to 8 inches, as shown by the drawing.

"There will be placed on deck in the centre of the vessel, between frames 75 and 77, a pipe of 24 inches diameter at the base, 18 inches diameter at 10 feet from the base and upwards, and 25 feet high; pipe to be $\frac{1}{2}$ inch thick to 10 feet high; from 10 to 20 feet high, $\frac{1}{4}$ inch thick; above that, $\frac{1}{8}$ inch thick. Vertical seams to be butt-jointed, with single rivetted straps inside, rivets countersunk on the outside. Horizontal seams butt-jointed, with bands on the outside, as shown in the drawing.

"From the band 15 feet from the deck will extend three braces of 1-inch round iron to an eye-bolt in the deck placed 15 feet from the pipe. In each brace will be a turn-buckle for tightening them up. Into this pipe will enter the galley pipe, and a pipe from the upper part of the men's water-closets; these pipes will rise 5 feet above the deck. The space around them is to be left open for the free egress of air from the berth deck, to assist in the ventilation. A plate, however, of 2 inches thickness is to be fitted, as shown in the drawing; so that in case a shot perforates the pipe near the deck the two small pipes may be taken down, and this fitted in to prevent the ingress of water when the vessel is in a sea way under the enemy's fire, before the pipe could be repaired.

"There will be placed over the iron plating of the deck a planking of white

pine wood, $1\frac{1}{4}$ inch thick, in strips of 4 inches wide each. This wooden deck will be secured to the iron with a marine glue which will be furnished you by the government. The glue is to be heated to a temperature of 400° Fahrenheit when applied, and to be coated on the deck plating and the edges of the planks to a thickness of $1\frac{1}{8}$ of an inch, and the planks pressed firmly into it. Around all ventilating and coal shut holes in the deck there will be a ring of wood $1\frac{1}{4}$ inch thick, 3 inches wide, neatly turned, having the inner diameter the same as that of the hole in the deck plating.

"The top surface of the coal shut plates to be covered with wood in the same manner as the deck, so that when they are in place the surface of the deck will be plain and smooth.

"The total thickness of deck plating will now be made $1\frac{1}{2}$ inch, instead of $1\frac{3}{4}$ inch, as ordered in a letter from this office, April 11, 1863.

"To accomplish this you may make the upper course 1 inch thick and the lower $\frac{1}{2}$ inch, or you may make them each $\frac{3}{4}$ inch thick. The latter is the preferable mode if the state of your iron on hand is such that it can be done without increasing the expense of the change.

"You will greatly oblige me if you will examine at once into the expense of making the changes directed in this letter, and send me the bill with each item in detail. Please confine it to the changes herein ordered, and if you are not prepared to send the accounts of former changes, it will not be necessary for you to keep this until you send them. I am particularly desirous of getting this as soon as possible.

"After having calculated the difference in cost between the original and amended plans, as directed in the foregoing, you will please return sheets Nos. 3, 4, 5, and 21, first sent you.

"It is proper to inform you that my authority for issuing these orders is a letter from the chief of the Bureau of Construction to the general superintendent, Rear-Admiral Gregory, dated June 11, 1863, which letter has been referred to me for action.

"I am, very respectfully,

"ALBAN C. STIMERS,
"General Inspector

"Messrs. SECOR & Co.,
"78 West street, New York city."

The delays occasioned in the work by the changes of the plans caused large losses to the contractors: first, by leaving their labor unemployed for the time upon their hands; second, by requiring them to carry insurance and interest; third, by the constant and rapid increase of the cost of labor and materials, and the depreciation of the currency, for which the department could not give adequate and complete relief. The delays worked a special hardship upon the builders of the nine vessels first mentioned, as it was provided in their contracts that they should each receive five hundred dollars per day for every day their vessels were completed before the time limited for their completion. From Mr. Wood, the present general inspector, the committee learned that this class of contractors, to overcome the delay occasioned by the changes in the plans, and waiting for the specifications, and to meet the earnest requirement of the department for an early completion of the vessels, prosecuted the work at night and on Sundays, and that for such work they were compelled to pay double prices, for which the department did not, and could not, make them any compensation.

From Messrs. Lenthall and Isherwood, of the Navy Department, and Mr. Wood, the general inspector, the committee learned that the petitioners entered into their contracts upon public competition, after general notice; that the lowest bid in a class was taken as a standard, which those bidding higher had to adopt, and that the prices were "barely fair at the then current rates;" that the peti-

tioners dealt fairly and honestly by the government in procuring the very best material which they could command, and doing the best quality of work, and that they were diligent in adopting all measures in their power to complete the work within the stipulated time. From the same gentlemen the committee learned that after the making of the contracts in the fall of 1862, the prices of labor, and such materials as the contractors were compelled to obtain, constantly advanced until within the last two or three months, and that the advance in the price of labor skilled in iron, and of materials required by the petitioners, was, to a large extent, owing to the great demand of the government for the same in her shops, navy yards, and shops for repair established at many points in the neighborhood of the operations of the navy, as well as to the depreciation of the currency.

The committee are satisfied that the petitioners have sustained, and are sustaining, heavy losses, which it was not in their power to avoid after making their contracts. Their contracts were generally for large amounts, and required a long time for their completion. It was impossible for them to make provision for all the material required, or to foresee and provide against the great advance in the price of labor. The demand for iron of peculiar and large sizes, and fine quality, was great, the supply small, and the means of producing it in the country limited. New machinery for preparing and rolling it was necessary; under such circumstances, builders of iron ships and heavy machinery could not contract in advance for such quantities as would be required, even could they advance the money, so that they were compelled to abide the fortunes of the market. During the progress of the work, by many of the petitioners, labor and materials have advanced, perhaps, one hundred per cent. This was not foreseen either by the reckless or the most prudent. The increased cost of labor and materials outran the calculations of every one. Ought the losses resulting from such a state of facts to fall entirely upon the petitioners? The committee think not. First. For the reason that the government, by her own competition for skilled labor and material, contributed materially to the losses. Second. The government by the mode and manner in which she imposed her taxes, contributed to the result. Third. For the reason (in the cases to which it applies) that the department delayed the work, that improvements might be adopted, or the drawings and specifications prepared, and the delays involved not only the cost of the alterations themselves, but, by increasing the time required to complete the vessels, threw much of the material and labor upon the periods of enhanced prices, and thus materially increased the cost. And fourth. If the government had contributed to it in no way whatever, under the circumstances, she ought not to allow the petitioners to bear the whole loss.

During the first period of the war, almost without a navy, she undertook the work of blockading thousands of miles of coast. To meet the exigencies of the times she taxed to their utmost the talent, skill, and energies of the country. Not only were ships to be produced that could lie at the mouths of and blockade the harbors, but the experiment was undertaken of building ships and boats that could safely pass forts and batteries, and ascend the rivers and co-operate with the army. Iron clads became a necessity, but their production was an experiment. The navy yards and their machinery were wholly inadequate to the work. The ship-builders of the country were appealed to. They responded and the result of their efforts in the great experiment has been the production of a navy most formidable in attack, and unequalled in defence. The ships and their engines, being of great size and power, required for their production new machinery of extraordinary weight and power. In advance it could not be told what time would be required for building the vessels or the engines, especially as the department must constantly modify the plans. If, then, enterprising citizens came forward to aid the government in her experiment by the use of their shops, machinery, and money, in a work the cost of which they

could not closely estimate, nor know the time that would be required for its completion, and then the currency is depreciated by its great increase, and prices go up beyond all calculation, is it just, is it consistent with the people's conscience, to allow the whole loss to fall upon them? The committee think it should be divided.

The following statement shows, as accurately as the committee have been able to ascertain, the per cent. of advance in skilled labor, and the increased cost of iron, from January, 1863, to June, 1864, and the advance in copper from September, 1862, to June, 1864:

Advance in material and labor since September 2, 1862.

Percentage—advance of labor.		Price of iron at Pittsburg.	
		Bars.	1 ¹ / ₂ Cates.
January 1, 1863.....	\$1 00	August, 1862.....	2½ 4
February 1, 1863.....	1 16	September, 1862.....	2¾ 4½
March, 1863.....	1 33	November, 1862.....	3 4½
May, 1863.....	1 44	January, 1863.....	3½ 5½
October, 1863.....	1 47	May, 1863.....	4½ 5¾
November, 1863.....	1 60	July, 1863.....	4½ 6
December, 1863.....	1 72	September, 1863.....	4¾ 6½
April, 1864.....	1 80	November, 1863.....	5 6½
May, 1864.....	1 91	January, 1864.....	5½ 6¾
June, 1864.....	2 00	May, 1864.....	5½ 7
		April, 1864.....	6½ 7½
		May, 1864.....	7 8¾
		June, 1864.....	7½ 9½

INGOT COPPER.—September, 1862, 20 c.; June, 1864, 45 c.

The case of the iron ship *Dunderberg*, being constructed by Mr Webb, requires special notice. This vessel is intended for a fast-sailing, sea-going and powerful ship-of-war. Her tonnage, as mentioned in the contract, is 7,000 tons, and her engine 96 inches; but in the contract it is provided that the builder, one of the most eminent ship-builders of the country, might increase the size of the vessel and the size and power of the engine as he might find necessary to attain the speed desired, and safely to carry the heavy armament for which she is intended. Under that provision of the contract the engine has been made 100 inches, increasing the power about 23 per cent. and additional length and breadth given, so as to add to her capacity 1,600 tons. For the additional cost thereby occasioned the contractor is receiving nothing.

The committee think that the provision referred to does not contemplate that the increased size and power should be given the vessel at Mr Webb's cost, but that he ought to be paid for the same as if ordered by the department; that the discretion was allowed to him to secure as perfect a vessel as possible, and that the pay should correspond with the additional cost. In this respect special provision should be made for him. The committee also think that the case of the harbor battery, *Comanche*, is special and peculiar. When the work for that vessel was about completed, and nearly ready to be shipped to California, there to be put together, the *Weehawken* broke her engine on her way to Port Royal, and the engine intended for the *Comanche* was taken for the *Weehawken*, and thus the shipment of the *Comanche* was delayed many months, causing the contractors delay, loss in interest, insurance, and the constant advance in labor. The committee think the relief of the builders of the *Dunderberg* and the *Comanche* should not be restricted, as they think should be in the case of the other contractors, and the resolution they report provides accordingly.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 22, 1865.—Ordered to be printed.

Mr. FOSTER made the following

R E P O R T .

[To accompany bill S. No. 469.]

The Committee on Pensions, to whom was referred the petition of William Nicholls, have had the same under consideration, and beg leave to report :

The petitioner entered the service of the United States in the spring of 1813 as a volunteer scout and spy. He is recorded on the rolls of the army as having enlisted on the first day of April, 1814, and as having been honorably discharged on the 31st day of May, 1815.

From the petition and accompanying testimony it appears that the services rendered by the petitioner were of great value to the country, and were attended with extreme personal hazard. Among his first exploits was a reconnoissance made to discover the position of Colonel McHugh, an American refugee in the service of the British, who, at the head of a body of Indians, had been of serious annoyance to the Americans, and for whose capture or destruction a reward and commission were offered by our authorities. The petitioner discovered the position of McHugh, and at his instigation, General Smith, the American commander, sent a detachment under Major Morgan to ambuscade the Indians. McHugh fell into the same, and was brought to the ground by a bullet fired by the petitioner, which penetrated his hip joint. He afterwards died within our lines, and petitioner was one of the guard which delivered him to the British pickets. Petitioner afterwards visited Montreal as a spy, to ascertain the situation of the place and the troops, and in this service spent nine days in great peril of his life, being once discovered by the enemy, and escaping by stratagem and by fleetness of foot. After returning from this service, and while scouting near the British lines, he was pursued by a party of four horsemen. By great activity of movement, loading his rifle as he ran, and turning from time to time to fire, he dismounted three of his pursuers, killing one of them, and frightened the fourth into flight. He rode into camp upon a horse belonging to one of the vanquished cavalymen, carrying his sword also as a trophy. In this encounter he received a severe sword cut on his left wrist. Shortly afterwards petitioner was surrounded by Indians while scouting at some distance from camp, and was compelled to take refuge in a swamp. Here he remained for two hours, standing up to his waist in ice-cold mud and water, one of his pursuers being at one time almost within reach of his hand. At length, favored by approaching darkness, he effected his escape. From the exposure incident to this adventure, he contracted a rheumatic disease, which nearly deprived him of the use of his limbs, and from which he yet suffers. While suffering from this disability he was removed to a hospital at Plattsburg, and, having become convalescent, took part in the battle at that place. He was one of those who manned the long eighteen-pounder at the end of the bridge. In

this battle petitioner received a buck-shot in his left arm, which still remains there, and has caused the arm to shrink away to a considerable degree. He also had both ankles badly lacerated by the explosion of a bomb-shell. By the blowing up of the block-house at Plattsburg, petitioner lost certified bills for extra services, to a considerable amount, which have never been replaced, although he was promised at the time of his discharge that they should be duplicated. The papers give evidence of other distinguished services on the part of the petitioner, which it is not necessary to enumerate. It also appears that he declined a commission in the service, preferring the life of a scout and spy.

At the time of his discharge he was in easy circumstances, and did not apply for a pension. Some years afterwards he made application at the Pension Office, but as he was unable to furnish the proofs required, his claim was denied. In 1844, he applied to Congress for a pension, but his petition was rejected on the ground that there was no record of his service. This proof was in existence, however, and has been attached to the present petition. A surgeon's certificate is also appended as evidence that the marks of the injuries alleged to have been received by the petitioner do exist.

The committee believe this to be a meritorious case, but in granting a pension to the petitioner they do not feel justified in going back to the date of the original petition. They therefore report a bill for his relief, giving a pension of \$8 per month, to commence on the 1st of January, 1865, the date of the completion of the proofs.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 22, 1865—Ordered to be printed.

Mr. FOSTER made the following

REPORT.

(To accompany bill S. 470.)

The Committee on Pensions, to whom was referred the petition of Jane W Nethaway, have had the same under consideration, and beg leave to report :

The petitioner is the widow of David Nethaway, who enlisted as a private in the 81st regiment New York volunteers on the 21st day of October, 1861, and on the 1st day of January, 1864, re-enlisted for three years, and was mustered into the service as first sergeant of company C, of said regiment. On the 3d day of June, 1864, said Nethaway was wounded at the battle of Cold Harbor, Virginia, and was subsequently sent to Mower Hospital, in Philadelphia. On the 23d day of July, 1864, while in said hospital, he received from Governor Seymour, the governor of the State of New York, a commission as second lieutenant in said 81st regiment New York volunteers, dated July 21st, and giving rank from June 3d, 1864. On or about the 24th day of August said Nethaway rejoined his regiment. He was not mustered in as a second lieutenant, as there was no vacancy in any company which had men enough to allow a second lieutenant. He was, however, assigned to the command of a company, and performed duty as lieutenant in command. On the 26th day of September, 1864, he received a commission as first lieutenant in said regiment, dated September 16th, 1864, and giving rank from August 12th, 1864. On the 28th of September he was discharged from the service "by reason of promotion," and was instructed to report on the following day at headquarters 1st division, 18th army corps, for muster as first lieutenant. During the night of the 28th the regiment moved to "Chapin's Farm," and said Nethaway went with it, being still in command of a company, and was killed on the next day in the assault upon Fort Harrison.

The petitioner asks for the pension due the widow of a first lieutenant, and that his accounts may be settled on the basis of the rank conferred by the commissions referred to in the petition, the same as if the said Nethaway had been mustered as second and first lieutenant respectively at the times of the dates of said promotions. The committee are of the opinion that the prayer of the petitioner is just and reasonable, and report the accompanying bill for her relief.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 24, 1865.—Ordered to be printed.

Mr. RAMSEY made the following

R E P O R T.

[To accompany bill S. 473.]

The Committee on Naval Affairs, to whom was referred the petition of James Todd, administrator of Joshua D. Todd, late of the United States navy, deceased, asking that the difference of compensation between the grade of a passed midshipman and master may be allowed said Joshua D. Todd for the time he acted as master, under the direction of the Secretary of the Navy, have had the same under consideration, and report :

That, in the thirty-fifth Congress Joshua D. Todd petitioned for the allowance of a master's pay, from 17th of June, 1844, to 10th of August, 1846, during which period, while a passed midshipman of the United States navy, he performed the duties of a master, under directions from the Secretary of the Navy. The Committee on Naval Affairs, to whom the petition was referred, reported favorably by bill, deeming that, in the case of the petitioner, there were peculiar circumstances which made just and proper a deviation from the common rule which would prohibit any higher compensation than that allowed by law. The third section of the act of 17th of June, 1844, repeals all previous provisions of law granting to officers temporarily performing the duties belonging to those of a higher grade the compensation allowed by law to such higher grade; but by act of 10th of August, 1846, an exception was made in favor of passed midshipmen performing the duties of master under the direction of the Secretary of the Navy.

In the opinion of the committee the present claim is founded in justice, and they accordingly report a bill, the passage of which is recommended.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 25, 1865.—Ordered to be printed.

Mr. ANTHONY made the following

REPORT.

[To accompany bill S. No. 475.]



The Committee on Claims, to whom was referred the petition and papers relative to the claim of the Amoskeag Manufacturing Company, report :

The petitioners in this case ask that they may be paid for three regimental cook wagons furnished the government upon the order of General Frémont. The facts of the case are substantially as set forth in the following letter and opinion of the Solicitor of the War Department, viz :

WAR DEPARTMENT,

Solicitor's Office, Washington, D. C., December 6, 1864.

SIR: From the examination of the claim of the Amoskeag Manufacturing Company, referred to me, it appears that the three regimental cook wagons were ordered by Major General Frémont while in command in the department of the west, in 1861, to be made at the company's machine shops; that these wagons were made and sent forward to and used by the troops of the United States, in the field, in Missouri, while under General Frémont's command, and afterwards; that he was not authorized, under the regulations of the army, to give such order or to expend the money of the United States for such a purpose, and there is no appropriation from which this claim can now be paid. It does not appear, however, that the claimants were aware of this want of authority on the part of the officer by whom the order was given to them, and they seem to have received and filled it in good faith, in the regular course of their business. I recommend, therefore, that this department take no action in regard to payment, giving the claimants an opportunity to apply, if they choose, to Congress, through the proper committee, to include their bill in such appropriation bill as they may think proper and expedient to pass.

Very respectfully, your obedient servant,

WILLIAM WHITING,
Solicitor of the War Department.

Hon. E. M. STANTON,
Secretary of War.

It also appears that for these cook wagons was to be paid, by the agreement, sixteen hundred and fifty dollars.

Your committee are of the opinion that the government, having taken the benefit of what would seem to have been an unauthorized act of an agent, and the property of the petitioners having been used, employed, or appropriated to the public use, the government should pay for it; they therefore report the accompanying bill and recommend its passage.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 28, 1865.—Ordered to be printed.

Mr. FOSTER made the following

R E P O R T.

The Committee on Pensions, to whom was referred the petition of William Crosswell, have considered the same, and beg leave to report :

It appears from the petition and accompanying papers that the petitioner shipped on board the United States steamer Columbia in December 1862. In January following the Columbia was wrecked on the coast of North Carolina, and the petitioner, in attempting to leap from the vessel into a boat which was being tossed about by the waves, struck his side against the thwarts and produced a rupture. His injury was aggravated by exposure in wet and insufficient clothing, and by bad treatment, as a prisoner, by the rebels—he having been captured and taken to Richmond after his escape from the vessel. He is now unable to support himself, and asks a pension of the government. He is unable to produce evidence from those who were present at the time of the accident, inasmuch as in the general confusion which prevailed scarcely anybody noticed it. One witness, upon whom he depended for proof, has deserted since his exchange and is not available. Ample testimony is submitted, however, that the alleged disability does exist, and that it did not exist before the petitioner entered the service.

The committee are of the opinion that the case is meritorious, and they submit herewith a bill allowing the petitioner a pension of \$8 per month, to commence on the first day of February, 1865.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 28, 1865.—Submitted and ordered to be printed.

MR. FOSTER, from the Committee on Pensions, made the following

REPORT.

The Committee on Pensions, to whom was referred the petition of Mary McIlvoy, have had the same under consideration, and beg leave to report :

Petitioner is the widow of Samuel McIlvoy, who enlisted as a private in the seventh regiment Rhode Island volunteers, on the 10th day of July, 1862. On the 30th of September, 1864, he was wounded in an engagement with the rebels near the Weldon railroad, Virginia, and died of his wounds on the 25th of October, 1864. He was commissioned by the governor of Rhode Island as a second lieutenant in said regiment on the 25th of July, 1864, and as a first lieutenant on the 14th of October, 1864, and for the six weeks preceding his death had been performing the duties of lieutenant, although he had not been mustered into the service as such. The petitioner asks for a pension at the rate which would have been allowed her by law had her late husband been actually mustered into the service as a first lieutenant.

The committee are of the opinion that the claim is a just one, and submit the accompanying bill for the relief of the petitioner.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 28, 1865.—Ordered to be printed.

Mr. WILSON made the following

REPORT.

The committee of conference on the disagreeing votes of the two houses on the bill H. R. 51, entitled "An act to establish a bureau of freedmen's affairs," having met, after full and free conference have agreed to recommend to their respective houses as follows: That the Senate recede from their amendment to the said bill, and the committee agree to the following as a substitute :

AN ACT to establish a bureau for the relief of freedmen and refugees.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby established in the War Department, to continue during the present war of rebellion, and for one year thereafter, a Bureau of Refugees, Freedmen, and Abandoned Lands, to which shall be committed, as hereinafter provided, the supervision and management of all abandoned lands, and the control of all subjects relating to refugees and freedmen from rebel States, or from any district of country within the territory embraced in the operations of the army, under such rules and regulations as may be prescribed by the head of the bureau and approved by the President. The said bureau shall be under the management and control of a commissioner, to be appointed by the President, by and with the advice and consent of the Senate, whose compensation shall be three thousand dollars per annum, and such number of clerks as may be assigned to him by the Secretary of War, not exceeding one chief clerk, two of the fourth class, two of the third class, three of the second class, and five of the first class. And the commissioner and all persons appointed under this act shall, before entering upon their duties, take the oath of office prescribed in an act entitled, "An act to prescribe an oath of office, and for other purposes," approved July 2, 1862. And the commissioners and the chief clerk shall, before entering upon their duties, give bonds to the Treasurer of the United States, the former in the sum of fifty thousand dollars, and the latter in the sum of ten thousand dollars, conditioned for the faithful discharge of their duties respectively, with securities to be approved as sufficient by the attorney general, which bonds shall be filed in the office of the First Comptroller of the Treasury, to be by him put in suit for the benefit of any injured party, upon any breach of the conditions thereof.

SEC. 2. *And be it further enacted,* That the Secretary of War may direct such issues of provisions, clothing, and fuel as he may deem needful for the immediate and temporary shelter and supply of destitute and suffering refugees and freedmen, and their wives and children, under such rules and regulations as he may direct.

SEC. 3. *And be it further enacted*, That the President may, by and with the advice and consent of the Senate, appoint an assistant commissioner for each of the States declared to be in insurrection, not exceeding ten in number, who shall, under the direction of the commissioner, aid in the execution of the provisions of this act, and he shall give a bond to the Treasurer of the United States in the sum of twenty thousand dollars, in the form and manner prescribed in the first section of this act. Each of said assistant commissioners shall receive an annual salary of two thousand and five hundred dollars, in full compensation for all his services. And any military officer may be detailed and assigned to duty under this act without increase of pay or allowances. The commissioner shall, before the commencement of each regular session of Congress, make full report of his proceedings, with exhibits of the state of his accounts, to the President, who shall communicate the same to Congress, and shall also make special reports whenever required to do so by the President, or either house of Congress. And the assistant commissioners shall make quarterly reports of their proceedings to the commissioner, and also such other special reports as from time to time may be required.

SEC. 4. *And be it further enacted*, That the commissioner, under the direction of the President, shall have authority to set apart for the use of loyal refugees and freedmen such tracts of land, within the insurrectionary States, as shall have been abandoned, or to which the United States shall have acquired title by confiscation, or sale, or otherwise. And to every male citizen, whether refugee or freedman, as aforesaid, there shall be assigned not more than forty acres of such land, and the person to whom it is so assigned shall be protected in the use and enjoyment of the land for the term of three years, at an annual rent not exceeding six per centum upon the value of said land as it was appraised by the State authorities in the year 1860, for the purpose of taxation, and in case no such appraisal can be found, then the rental shall be based upon the estimated value of the land in said year, to be ascertained in such manner as the commissioner may, by regulation, prescribe. At the end of said term, or at any time during said term the occupants of any parcels so assigned may purchase the land and receive such title thereto as the United States can convey upon paying therefor the value of the land, as ascertained and fixed for the purpose of determining the annual rent as aforesaid.

SEC. 5. *And be it further enacted*, That all acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

ROBERT C. SCHENCK,
GEORGE S. BOUTWELL,
JAMES S. ROLLINS,

Managers on part of House.

HENRY WILSON,
JAMES HARLAN,
W. T. WILLEY,

Managers on part of Senate.

IN THE SENATE OF THE UNITED STATES.

MARCH 1, 1865.—Ordered to be printed.

MARCH 2, 1865.—Ordered that 5,000 additional copies be printed.

Mr. DOOLITTLE submitted the following

REPORT.

On the 2d of July last, just before the close of the last session, on motion by Mr. Ramsey, it was

Resolved, That the Committee on Indian Affairs be authorized, during the recess of the Senate, to inquire into and report upon, at the next session of Congress, the policy of providing by general law so as to relieve the public domain of the United States of the possessory title thereto of the several Indian tribes, and to authorize the executive departments, from time to time, to assign to the respective tribes such reservations as may be deemed essential, and to provide for their protection and care; and that, in this investigation, the committee be instructed to inform themselves with regard to the policy of the imperial and colonial authorities of Great Britain toward the Indians within their North American dominion."

This resolution directs inquiry as to the colonial and imperial policy of Great Britain toward the Indians throughout a vast extent of territory, stretching from the Gulf of Labrador on the east to the Pacific ocean on the west, from the northern boundary of the United States to the Russian possessions and the Arctic ocean, embracing both Canadas, all the provinces, Rupert's Land, and British Columbia—an area larger than the dominions of the United States, and larger than all of Europe.

It will be observed, however, that by far the greater portion is a barren and a frozen waste, whose soil and climate make its occupation by an agricultural or highly civilized people an impossibility.

It may, therefore, be divided at once into regions incapable of settlement and colonization, and into regions where both are practicable, and are, in some measure, already in operation.

Your committee have not had the time to go much into detail, and do not propose to make an extended report. With the aid, however, of information obtained from the Hon. William McDougall, late commissioner of crown lands of Canada, having charge of Indian affairs at Quebec, from public documents then obtained through his courtesy, and from others found in the Library of Congress, they are prepared to state to the Senate, in terms sufficiently definite for practical legislation in regard to our own Indian policy, the information obtained by them in relation to the Indian policy of Great Britain.

Your committee find that the administration of Indian affairs, in by far the largest portion of the British possessions in North America, has been placed in the hands of a private corporation, known as the Hudson's Bay Company, to which was granted a monopoly of the fur trade. As a moneyed corporation organized for pecuniary gain, it has sought to advance that interest alone. It has maintained only such relations with the Indian tribes as would make them

better hunters, and would at the same time preserve the regions where the fur-bearing animals are found in a state so wild and uninhabited as to increase rather than diminish their number; while, on the other hand, in the Canadas and provinces, where agriculture, settlement, and colonisation are favored by the British authorities, a very different system of Indian policy prevails—a system in many respects analogous to our own. We remark, then, in the first place, that Great Britain has, directly or indirectly, adopted and maintained two distinct and radically diverse Indian policies in different portions of her North American possessions: One, for the want of better terms, may be called a civilizing policy; the other, a fur-trading policy. The one tending to settlement, agriculture, and colonization; the other, to preserve the wildness of nature and men and animals in their savage state.

BRITISH FUR-TRADING INDIAN POLICY.

History shows, in all that vast region under the domination of the Hudson's Bay Company, embracing Rupert's Land and British Columbia, settlements and colonization by white men have never been attempted upon any large scale. Indeed, the policy of that company has been to retard settlements. Holding a close monopoly of the trade in furs, it has been their interest and their policy to preserve nature in her wildest state, in order to preserve the animals which yield this precious product, and to keep the wild men who hunt and trap them dependents and vassals.

Under such a policy there is, and there can be, no serious conflict between civilization and barbarism, for the latter reigns with almost undisputed sway.

We find, according to the best authorities, the Hudson's Bay Company had, in 1856, one hundred and fifty-four trading posts or establishments, at which they employed the Indians to hunt for them. There were at that time, not including the Esquimaux, nor Indians settled in Canada, one hundred and forty thousand (140,000) Indians mainly dependent upon that company for supplies; the adult males of which were more or less engaged in hunting and trapping for the benefit of that company, while, at the same time, there were only eleven thousand (11,000) whites and half-breeds in Hudson's bay territory, and nearly three-fourths of these were half-breeds.

They may be classified as follows:

Thickwood Indians, east of the Rocky mountains	35,000
Plain tribes, (Blackfeet,)	25,000
Indians in British Columbia and northwest coast.....	80,000
Whites and half-breeds.....	11,000

While it is sometimes said, by way of denunciation of our Indian policy, that in all that vast region there have been no wars between the Indians and the whites, it should not be forgotten that in all that vast region, as large as all of Europe, there were less than three thousand white men, and that there has been no attempt to introduce settlements or colonization to any considerable degree. And yet even there, it seems, the Indian race is tending to decay.

We find in the minutes of evidence taken before the select committee on the Hudson's Bay Company, of which the Hon. Henry Labouchere was chairman, many interesting facts bearing upon this subject. Lieutenant Colonel John Henry Lefroy, who resided in North America eleven years, and was two years employed to make magnetical observations throughout the whole of the accessible portion of the Hudson's bay territory, was examined before that committee.

"Question by Sir John Pakington: Is the Indian population supposed to be decreasing in these regions?

"Answer. I fear there is no doubt that it is decreasing very rapidly.

"Question. From natural causes, not from the effect of European encroachment ?

"Answer. I apprehend that European encroachments have had a great deal to do with it, but it has been rather more from moral influences than from any direct physical influences.

"Question by Mr. Roebuck : Is it not a known fact that the brown race disappears in proportion to the coming on of the white race ?

"Answer. I think it is.

"Question by Sir John Pakington : Looking to this vast district between Canada and the Pacific, there is a portion of it, I apprehend, in which the white race can hardly be said to be advancing as yet ?

"Answer. Yes.

"Question. And over a great portion of that tract I presume there is no reason to suppose that the Indian population is deteriorating or diminishing ?

"Answer. It is so, I think, from causes which may appear rather remote. I believe there is a constant depressing moral influence, which is caused by association with classes in a superior condition of comfort to themselves ; then they become reckless and improvident ; they barter what is necessary for their own subsistence, or that of their wives and children, which is equally important, for finery, things which are of no real good to them ; their good furs which they had better wear themselves, they trade away for beads, and they go half clothed, and they contract pulmonary complaints, and their children are born with weakened constitutions, and their families are diminished in number ; the result is, it is hard to find an Indian family of more than three or four children. I remember an instance of one man who, I think, had nine children, who was quite a phenomenon of paternity.

"Question. But surely your last answer applies to those cases in which the Indian has been brought into contact with the European ?

"Answer. They are all brought into contact with the Europeans by constantly trading with them, and depending upon the European trade for their means of subsistence.

"Question. Is that answer correct as affects the whole of the great district to which I have referred ?

"Answer. With the exception of a very small district to the north, on what are called the barren grounds, where there are small bands of Chipewyan Indians subsisting on the flesh of the reindeer, and where the skin of the reindeer is their clothing, who rarely come to any forts for trade because their country has nothing valuable.

"Question by Mr. Bell. Are you aware of any settlement in the Hudson's bay territory besides the Red river where any attempt has been made to civilize the Indians ?

"Answer. Such an attempt was made near Norway House, at the head of Lake Winnipeg, where there was a village of Cree Indians in a tolerable state of civilization when I visited it. That is the only case I know of an attempt to collect the Indians and settle them in a village. Since that time a small settlement has been at the Pas, at the Basquian river. It was occasioned by the bequest of a private benevolent person who left a sum of money to be laid out for that purpose, and it has been so done.

"Question. You have visited most of the establishments of the Hudson's Bay Company ?

"Answer. Yes.

"Question. And that is the only instance ?

"Answer. That is the only one I can think of at this moment.

"Question by Mr. Roebuck. Speaking generally, have not all attempts to civilize the Indians in North America failed ?

"Answer. They die out in the process. Some progress has been made.

"Question. They disappear?

"Answer. Yes."

Sir George Simpson, who for thirty-seven years was governor of the Hudson's bay territory, was also examined at great length as a witness. We extract from his testimony as follows:

"Question by the chairman. What number of Indians do you calculate are living in the whole of the Hudson's bay territory?

"Answer. In the Indian territory of Rupert's Land we estimate them at 42,800.

"Question. When was that calculation made?

Answer. This season (1856) I collected from different data all the information within reach when I understood I was required to leave Canada.

"Question. In the rest of the territory what are the numbers?

"Answer. In the Indian territory, east of the Rocky mountains, 80,000.

"Question. What is your system with regard to the Indians in connexion with the fur trade?

"Answer. Our mode of management is this: The Indians are usually outfitted from the establishment in the fall of the year with such supplies as will enable them to get through the winter in comfort and make them hunt.

"Question. How do you pay them for the furs which they bring?

"Answer. We pay them by barter entirely; money is not known in the country; they do not know money; it is a barter trade on a tariff of very old standing, varied from time to time according to circumstances.

"Question. Do you ever encourage them to resort to agriculture, under any circumstances, when it can be done?

"Answer. Always; we have encouraged them by every means in our power.

"Question. Where?

"Answer. At the Rainy lake, Cumberland, Swan river, Norway House, and the seats of all the missions. We are exceedingly anxious they should give their attention to agriculture.

"Question. Have they to any extent adopted agriculture?

"Answer. Not to any material extent; they have a dislike for field labors.

"Question. You state that there are wars in some parts of the country between different tribes of Indians?

"Answer. Yes.

"Question. I believe you have managed to preserve peace as between the red man and yourselves?

"Answer. Decidedly."

The committee here remark, that as the Indians have nothing to apprehend from advancing settlements of white men, and as they are almost entirely dependent on the Hudson's Bay Company for supplies, there is no occasion for any wars with the whites. On the other hand, they are bound by every consideration to keep peace with that powerful monopoly which has employed and fed them for generations.

The Right Rev. David Anderson, who for eight years had been bishop of Rupert's Land, residing for the most part of the time at the Red River settlement, also gave his testimony before the committee, from which we extract:

"Question by Mr. Roebuck. Are you aware of any great settlement ever having been made by a half-caste population on the continent of America?

"Answer. No, I have not.

"Question. Are you at all aware of the fact that the brown population dies out as the white population advances?

"Answer. Such is said to be the general statement; but still, in our case, as

regards the Indian settlement parish, it is the other way, the population is increasing.

"Question. How large is the population in that parish which you now speak of?

"Answer. It is one of four churches on the Red river; the Indian settlement parish has a population of 650

"Question. Indians or half-breeds?

"Answer. Indians.

"Question. How many half-breeds are there there?

"Answer. They come in the adjoining parish, higher up on the Red river.

"Question. How many half-breeds have you in your diocese?

"Answer. A very large number; perhaps 1,500 or 2,000 on the Red river.

"Question. So that, taking them all together, adding the 2,000 half-breeds to the 600 full-blooded Indians, you have 2,600 inhabitants with the Indian blood in them?

"Answer. Yes.

"Question. Supposing colonization to be open to the white man, are you at all aware of the fact, which has been proved by long history in America, that wherever colonization by the white man takes place the brown man disappears?

"Answer. It has been so in the United States.

"Question. Has not it been so in Canada?

"Answer. It has been in a measure true in Canada.

"Question. So that, in fact, in all parts of the territory of America in which the white man has appeared, the brown man has disappeared.

"Answer. I am rather unwilling to believe it as regards one's own country, because I think that more of effort is made for the Indians. I am sure that the Indian effort is more successful in our country than in the States or in Canada.

"Question. You are speaking of the Indian effort applying to 2,600 persons?

"Answer. To the much larger number of 8,000 Indians, taking the whole territory.

"Question. But that territory, I take it, has nothing to do with colonization?

"Answer. No.

"Question. As to that part which is affected at all by colonization, from the very imperfect colonization to which it has been subject hitherto, your experience goes in favor of the fact that the brown man can resist the encroachments of the white man.

"Answer. It does; but of course I may be a partial judge in the matter.

"Question. Have you at all contemplated the fact of the whole territory, which is capable of colonization, being thrown open to colonization; what would then be the effect upon the brown man of that altered circumstance?

"Answer. I think of it almost daily. My hope is that the Indian may be raised in the interval before the civilization sweeps westward, as it must; and I always feel that my object is to raise a people as well as to give them Christianity.

"Question. Do the habits of the brown man ever make him a colonist; have you any evidence in the whole continent of America of the brown man being a colonist?

"Answer. There are the Cherokees in the United States.

"Question. How long has that experiment been tried?

"Answer. For some years with the Cherokees.

"Question. That is the solitary case of the brown man withstanding the encroachments of the white man?

"Answer. My impression is that it has hardly been tried well yet; that we may be more successful than in previous cases.

"Question. Supposing that the policy of the government were changed, and that the territory were opened to colonization, should you then consider it a matter of very great importance to maintain the Indian population there?

"Answer. Very great.

"Question. Why?

"Answer. My own feeling is, that by opening the whole country to free competition the Indian would be sacrificed.

"Question. He would disappear?

"Answer. Yes, but I think that if we can keep the southern parts as a colony or province, then the Indian may still be preserved.

"Question. Why would he disappear; is it because a more energetic, a more civilized, and, in fact, a more intellectual man would come in competition with him?

"Answer. Because of the baits which would be held out; there would then be an abundance of spirituous liquor brought in.

"Question. But spirituous liquor affects the health of the white man as it does that of the brown man, does it not?

"Answer. But he falls more readily beneath the temptation.

"Question. That is to say, he is less civilized?

"Answer. Yes.

"Question. The more civilized man conquers the less civilized man?

"Answer. He does.

"Question. Do you think it advisable to maintain the less civilized man in a community which will hold the more civilized man?

"Answer. I should be very sorry to forfeit the Indians in the territory.

"Question. That is not my question; the question is, do you think it would be advisable to keep the territory in such a condition as should maintain the existence of a less civilized population, when it would really maintain a more civilized population?

"Answer. If I thought that the Indians were to be forfeited, I would rather keep back the more civilized.

"Question. That is to say, you would prevent the colonization by the more civilized man, to maintain the existence of the less civilized man?

"Answer. I think each might have his position in the country—the civilized in the south and the Indians further north.

"Question. Does it not come to the conclusion to which I have endeavored to draw you?

"Answer. I should be sorry to allow it as regards the Indian.

"Question. Though your sympathies may go thus, does not the reasoning lead you to the conclusion to which I wish to bring you?

"Answer. I hope the experiment may yet save the Indian.

"Question by the chairman. Do you not think the true policy would be to establish just and equitable laws as between the brown and the white man, and to leave the rest to take its course?

"Answer. My own feelings would be in favor of a settlement, a colony, or a province in the southern part of the territory, stretching from Lake Superior to the Rocky mountains.

"Question. Not asking whether a man was brown or white, provided he obeyed the laws and behaved well?

"Answer. I think so, and I think the Indian might still be saved.

"Question. From what you have seen of the half-breed race at the Red river, do you despair of their being useful and prosperous members of a civilized community under proper laws?

"Answer. I do not despair in the smallest degree of them.

"Question. Are you aware of the circumstances under which the Indians within the province of Canada are at the present moment?

"Answer. I know of one spot on Lake Huron where they are.

"Question. Is it not the case that some of the tribes have landed property to a considerable extent, and even funded property?

"Answer. I think that is more the case among the Cherokees, in America.

"Question by Mr. Roebuck. Still, I think you have expressed an opinion that if there were free colonization the white man would overrun the brown man?

"Answer. Yes, if it were free over the whole country.

"Question. Therefore, if there were equal laws for the brown man and the white man, the brown man would disappear?

"Answer. Yes, unless it were controlled in some way."

The committee forbear to make any further extracts from a volume of testimony. What is here adduced is enough to show that even in those great regions where advancing settlements of white men have made no perceptible encroachments upon the Indian's possession of the territory, and where spirituous liquors have been excluded, the feebler race, by the force of mere contact with the superior, is slowly but surely falling into decay, notwithstanding both interest and policy, as well as humanity, plead with the Hudson's Bay Company for their preservation.

BRITISH CIVILIZING INDIAN POLICY.

But when we turn our eyes to the Canadas and other provinces where settlement, agriculture, and colonization are the cherished policy, we behold the same uncompromising, eternal, irrepressible conflict between savage and civilized life which we have always found in the history of settlement and colonization of the United States from the beginning, less intensified than among us, it is true, just in proportion as the causes at work among us in advancing settlements and colonization are more numerous and more powerful than among them. In the Canadas and eastern provinces, where the attempt has been to plant European civilization in the wilderness by the cultivation of the soil, in accordance with its first great law, we behold the forests and haunts of wild beasts changed into towns, villages, and farms, with cultivated fields bearing golden harvests, and green pastures covered with flocks and herds. It is evident that before such a policy the wild huntsman finds his occupation gone; the forests are gone; the game he hunts is also gone, and he must give way. To one of three alternatives he must yield. He must of necessity retire to other forests where game still abounds, or change his mode of life from that of a hunter to a cultivator of the earth, or he must starve to death. In a word, he must flee at the approach of civilization, or be changed from a savage to a civilized man, or be supplanted by one.

It would be far beyond the limits which the committee have prescribed to their report to go any further into details than may be necessary to show the general condition of the Indians in Canada and the general policy adopted towards them. It seems that at an early day, under the French rule, large tracts of land were deeded to the Jesuits for the conversion, instruction, and subsistence of the Indian tribes. These Jesuits thereby became at once spiritual teachers and trustees of landed estates. These lands they leased for long terms to white settlers, and used the rents to sustain their churches and to provide for the wants of the Indian. In the course of years the Jesuits became thereby master of the Indian's superstitions, and, as his hunting grounds disappeared, master of his necessities also. The Indian soon came to render, and in most cases rendered, a willing obedience to a dominion at once spiritual and temporal, which ruled his superstitions and supplied his necessities. This system is not without some advantages. It gives to those who administer it a mild, firm, and decided ascendancy over the Indian, body and soul. But even under this system, gentle as it is, if we observe carefully the effects resulting from contact with the superior and more civilized man, we behold the same general results. Take the Iroquois of the Sault St. Louis. These Indians removed from the

valley of the Connecticut and the State of New York at an early day. They were settled on the seigniorship now in their possession, near Montreal, which was granted in 1680 to the Jesuits for the "conversion, instruction, and subsistence of the Iroquois." Some 14,257 acres were leased to white men at the low rates ordinarily exacted under the old feudal tenure. More recently the management of their temporal affairs has been placed under the supervision of the Indian department established in Canada. By their last census returns there were 1,342 souls, showing, latterly, something of an increase. But their real condition is summed up by the special commissioners to investigate Indian affairs in Canada as follows:

"These Indians, though of such mixed descent as scarcely to reckon a single full-blooded individual among their number, retain the aboriginal apathy and disinclination to settled labor of any sort. They still cling to their roving habits, and many of them are voyageurs and canoe men in the employment of the Hudson's Bay Company. A considerable number, too, are occupied during the summer in rafting timber, and as pilots through the rapids of the St. Lawrence. They cultivate a limited quantity of land, but most of the reserve which is in their own hands is lying idle, unprofitable alike to themselves and the country at large. From its proximity to Montreal, the temptation to plunder fire-wood is irresistible. So extensive have been the depredations of this nature carried on by the whites, aided by a considerable party of the more dissipated among the Indians, that a serious riot was the result, and some of the offenders were tried at Montreal for the crime."

We find also, from the report of the same commissioners, that the advancing settlements of white men in Canada bring the same results to the Indian tribes with which all are so familiar in our own country. The hunting-grounds of the Indians on Ottawa river were taken possession of by the white population before they were surrendered, or the Indian interest consulted in any way, and a new tract of country was set apart for them. The commissioners say of them:

"They are under the charge of the Rev. Mr. Deceage, but are still too much unsettled to have made much progress of any sort. However, the humanizing effects of Christianity are slowly becoming apparent, and there remain but very few, even of the wandering Indians, between the Ottawa and the Saguenay, who have not, outwardly at least, renounced heathenism.

"The unlimited use of ardent spirits, however, seems to be the great check to their advancement. On returning to the settlements with their peltries, everything is sacrificed to the gratification of this passion, and the whites even find it their advantage to follow them into their remote hunting-grounds, in order, by pandering to this infatuation for liquor, to obtain at an almost nominal rate the fruits of months of toil."

If we turn to the condition of the celebrated Six Nations in Canada, we find it summed up in the following language:

"The Indians cultivate separate farms, and each is secure in his possession from the intrusion of other Indians on the lot he occupies. His heirs inherit his improvements, but the soil-right belongs to the Six Nations in common. The Indian has no right of transferring his portion of land to another.

"There is not much difference observable in the system of farming pursued by the Six Nations and that of the surrounding whites. They use the same implements and raise the same crops. Some of the Indians have several hundreds of bushels of wheat to dispose of in season, after providing for their own wants.

"Being surrounded by a white population, they have almost entirely given up their habits of hunting, and rely exclusively on the arts of civilization for the means of support.

"Many of them show considerable aptitude for mechanical arts, which they acquired in the Mohawk institution, but they seldom rise to any great degree of

proficiency, owing to a want of perseverance, and that apathy which has such a pernicious effect upon them in all respects.

"The health of the Six Nations is, on the average, nearly, if not quite, equal to that of the surrounding white population.

"The principal diseases are contracted by their own imprudence; much illness is caused by drunkenness, a vice to which they are much addicted from the temptations constantly thrown in their way by their unprincipled neighbors."

Among the "Moravians of the river Thames" we find a remarkable instance of demoralization of a tribe once most respectable. The commissioners say:

"For many years the Moravians were a contented, industrious, and happy people, living in a compact village, and working the land in common; but their condition and character have, of late years, become so altered that, as a band, they may now be considered the poorest and most dissipated in this part of Canada." (Continued, page 49:)

"Among many causes which have operated to bring about this state of things we may mention three:

"1st. The removal, in consequence of some disagreement among themselves, of a portion of the band to the territory of Missouri, in the United States.

"2d. The fact of possessing so large a tract of land, covered with timber, which, in consequence of the settling and clearing up of the country around them, was eagerly sought after by the whites. This induced many to leave their houses and gardens in the village and settle on distant portions of their reserve bordering on the river, when, in spite of and in direct opposition to the orders of the superintendent, they would dispose of timber, easily obtaining thereby money to be spent in idleness and dissipation.

"3d. In 1852 Mr. Holcroft Clench obtained, by document signed by many of the band, the exclusive right to all the valuable timber on the entire reserve. No sooner was this contract executed than many of those even who had consented to it regretted having done so, and, joining with those who were opposed to it, charged their missionary, the Rev. Mr. Vogler, with having used his influence to obtain it. Divisions in the church then followed, and a large party who left it attached themselves to the Wesleysans—the society afterwards erecting a chapel on the lot occupied by Philip Jacobs, a chief and leader of the seceding party.

"Two factions were now formed, and so determinedly have they opposed each other that they could never be induced to agree to any measure, however calculated to improve their condition.

"Notwithstanding all efforts to prevent the sale of timber, many there were who would still continue the practice, moving from one part of the reserve to another where they were the least likely to be detected, finding on every side persons ready to purchase and remove it beyond the reach of seizure.

"Possessing the richest land in the country, they raise so little food that within the last two years many families have been in a starving condition."

The discouragements attending the best directed efforts to educate Indian youths at school are forcibly depicted. They say:

"But independently of these drawbacks, it is discouraging in the extreme to see how transient is the impression made upon the children by the training which they have gone through at these schools. They do not seem to carry back with them to their homes any desire to spread among their people the instructions which they have received.

"They are contented, as before, to live in the same slovenly manner; the girls make no effort to improve the condition of the houses; nor do the boys attempt to assist their parents steadily on the farm.

"It is true that improvement is perceptible in their own personal appearance, but the amelioration extends no further.

"The same apathy and indolence stamp all their actions as is apparent in the demeanor of the rest of the Indians.

"It is, then, with great reluctance that we are forced to the conclusion that this benevolent experiment has been to a great extent a failure.

"The claims of the Indians in respect to their former territorial possessions have been justly said to be properly resolved at the present day into—(continued on page 104)—

"An equitable right to be compensated for the loss of the lands from which, in former times, they derived their subsistence, and which may have been taken by government for the purposes of settlement. It has also been argued with truth that the measure of such compensation should be to place and maintain them in a condition of at least equal advantage with that which they would have enjoyed in their former state.

"But the aborigines have other and stronger claims on the government than those which would be compensated by payment for their land."

The commissioners state with so much clearness and force the difficulties arising from the contact of an inferior, a savage or semi-civilized race with a superior and more civilized race, that we can hardly do justice to them without quoting their language at some length:

"Various schemes have from time to time been proposed for the apportionment of lands to the Indians. An examination of these several suggestions will show that they may be divided at once into two classes: the one advising the total seclusion of the aborigines from contamination by the white settlers; the other, hoping by constant intercourse to assimilate the habits of the two races. The separatist system has been adopted as a measure of government policy in some of the States, and has been tried on a small scale in this country. In this last instance, the location of the Indians was intended to be their permanent home; the same objections do not, therefore, lie, at least in the same degree, against it as are urged with so much justice against the course pursued towards the Indians in the western States, where they are from time to time forced to abandon their homesteads, and retire before the advancing wave of white immigration.

"The annual reports made by the head of the Indian department in the United States embody the returns made to him from each of the missionaries and agents throughout the country. Their testimony is unanimous in deprecating the system of frequent removal as practiced in the western Territories.

"The Indian, naturally averse to labor, cannot be induced to exert himself while he feels that he may any day be deprived of the land on which he is located; and while his congenital restlessness is strengthened by the change of domicile, his greediness for the means of gratifying the whim of the moment is fostered by the large sum of ready money promised to him to gain his acquiescence in the move. This cherishes his habits of relying on other sources than his own, and of improvidently contracting debts whereby he becomes the victim of the rapacious trader. Such are the results of the system of driving the Indian before the advance of white population. It encourages them in many failings, without affording them that protection from contamination which its advocates claim. The extensive reserves in many parts of this country have also tended to illustrate the defects of the secluding mode of dealing with them. As they have, in general, been scrupulously respected, there are, on a small scale, retreats into which no white settlers intrude.

"The natural apathy of the Indian character, and their inherent desire to wander without restraint, hinder their advancement, while their position as minors, freeing them from all responsibility, leads them to abandon self-reliance, and trust to government to help them in all their difficulties. There are other reasons, too, why this plan is objectionable: a country situated as Canada is, with the increasing tide of emigration setting into it, is not one adapted for locking up large tracts of fertile lands for the sake of a few individuals who are too

idle to reap the benefit of them. At the same time, the faith of the government may be to a certain extent pledged by the proclamation of 1763, and by the policy adopted by the crown hitherto, not to disturb the Indians in the lands occupied by them, nor to take possession of such reserves save by their permission, and in virtue of a voluntary surrender on their parts; we have, however, expressed our opinion on this point before. The settlement formed by Sir Francis Head, on the Great Manitoulin island, was a practical experiment to test the advantages to be derived by isolating the Indians from improper influences, and at the same time giving them the advantages of religious, secular instruction and supervision. This beneficent scheme has not, however, from various causes, met with the success hoped for. Much of the civilizing influence of their officers is lost upon the Indians, who are allowed to relapse into their vagrant habits, in pursuit of game and fish, instead of being actively encouraged and incited by example to adopt a life of industry, whether as farmers or mechanics.

"The attachment of the natives to the parts of the country where they have been born and brought up is extreme, and it cannot therefore be wondered at that they have in many cases refused to exchange their present reserves for lands in the north and west, fertile perhaps, but much more inhospitable in climate and productions than the rich tracts now occupied by them in the western peninsula of Canada.

"This disinclination on their part to remove has thus been another of the causes of the failure in the Manitawaning settlement; the tribes did not congregate there as was intended and hoped. But whatever may be the advantages in theory in keeping the Indians as children of nature, shielded from the contaminating vices of the whites, we believe that practically the system must be a failure unless it is accompanied by stringent police regulations prohibiting the sale of spirits, and erecting, as it were, a barrier which may effectually exclude those restless pioneers who occupy the debatable land lying on the frontier of the civilized country. It is plain that in a country like Canada this is in most cases impossible. Such being, then, the objections to the system of endeavoring to keep the Indians entirely separate from the whites, it remains to look at the question from the other point of view, and see how their interests may be affected by allowing the whites to settle close to them, and by so doing endeavor to make the Indians by degrees an integral and useful portion of the population of the country.

"In so doing, however, it must not be overlooked that gentlemen of philanthropic views and greater experience demur to such a course as exposing the aborigines to greater temptations both to licentiousness and drunkenness—the two besetting sins of the Indians. There are some who go so far as to deny the lawfulness of marriage between individuals of the different races, as breaking down the natural barriers marked in visible characters on the aboriginal inhabitants of North America.

"But without going so far as this, if it could be shown that the above-mentioned vices preponderate greatly among the settled tribes, then it would be the duty of government to pause before deliberately placing them in so dangerous a position.

"The answers made to the queries put by the commissioners in 1842 tend to prove that there is no very great amount of immorality occasioned by the proximity of the white population to the Indian villages. Cases of women living in a state of concubinage with white men are comparatively rare, while the evidence adduced this year (Rev. Mr. Vogler's evidence) goes to show that such practices are prevalent among the Indians themselves at a very early age.

"It is our opinion that they are more likely to fall a prey to these temptations while living in a semi-savage and impoverished state than if settled on their own farms in the midst of a thriving and industrious population; lawlessness and

want of self-restraint are likely to be rife in proportion to the distance from regular and established authority.

"The accounts, too, of the health of the settled tribes are already much more favorable than those of the tribes hovering on the borders of civilization; epidemics are less fatal, while the diminished exposure checks the ravages of consumption, and of febrile attacks consequent on the hardship inseparable from the precariousness of a hunter's life. The more regular supply of wholesome food is another cause of the improved sanitary condition of the settled tribes.

"On neither of these grounds, therefore, would there seem sufficient reason to reject, summarily, the plan of compact Indian reserves as part of the settled population of the country. It now remains to see how far this system may, by the advantages which it offers, counterbalance the evils which are alleged to be fostered by the intermixture of the whites with the Indian people. Instances are not wanting either in Canada or the United States to show that compact reservations, surrounded by the whites, are a state favorable to the civilization and progress of the red man.

"In Michigan the tribal organization of many bands is completely dissolved, and the franchise, with all the other rights of citizenship, exercised by the Indians. They have good farms, with much surplus produce, and are beginning to turn their attention to handicraft and mechanical arts. They thus form an integral part of the population of the State, on the same footing as their white neighbors. This is a step to which we have not yet attained in Canada.

"But while, as a general rule, we believe the 'separatist' system to be unadvisable in the settled districts of Canada, we are of opinion that it might be beneficially carried out in the wild districts bordering on Lakes Huron and Superior. Nature has provided a refuge for the wandering tribes of that section on the Great Manitoulin island. Its size, its fertility, and its proximity to excellent fisheries, point it out as a locality where the system could be carried out with less difficulty than elsewhere.

"It is true that hitherto the attempts to induce the Indians to congregate there have proved a failure; it is equally true that weighty influences are at work to retain them in their present half civilized state, eking a scanty subsistence by the produce of the chase, and the sum realized by the sale of their peltries; and we do not conceive that the causes which have led to the failure of the settlement are inherent in the system. A more energetic and careful example and oversight would prove a stimulus to their exertion, while regulations respecting trade, and, above all, the enforcement of the acts against the sale of spirituous liquors, would go far to put a stop to the grievances which have been put forward so lucidly by the missionaries at Manitoulin.

"We believe, then, that the preferable course to be adopted in Canada must partake both of the separatist system and also of that in which the Indians are located with the white population. Which of these elements will predominate, must depend upon the locality of the band.

"In the settled districts the size of the tracts now set apart for the Indian seems to have been calculated rather with a view to their avocations as hunters, than with the idea that they could ever occupy them as farmers. Even now, after the immense cessions which have at various times been obtained, the reserves are quite disproportionate to the numbers and means of the bands residing on them. The settlement of the surrounding country by the whites has long since driven away the game, and the Indians for the most part occupy small patches of clearing dotted about in the large tract belonging to them, while the rest remains utterly unimproved. It is true that a difficulty presents itself at present in endeavoring to obtain possession of the waste parts of the reserves.

"The aborigines have been heretofore treated, to a certain extent, as sovereign princes—as lords of a soil of which yet they were not possessors. It is this

anomalous position which has given rise to much of the difficulty connected with these lands. No territory can be taken possession of except by a voluntary surrender from the Indians, while they are aware, to a certain extent, of both the strong and the weak points of their title, and, feeling the pressure of the tide of immigration, refuse to cede a part of their possessions for fear of being deprived of the whole.

"The unwillingness on the part of the Indians to surrender has been greatly increased by the losses they have suffered through the carelessness and dishonesty of those appointed to watch over their interests. They have ceded very large tracts of valuable lands without receiving one penny of compensation, and it will not be until these losses have been somewhat repaired that we can expect them often to give up voluntarily more of their reserves.

"The large sums lately realized by the sale of the Saughun territory will go far to counteract the unfavorable impression under which they have heretofore labored, and its effects are, indeed, already apparent. To aid this growing desire to exchange their lands for lasting annuities derived from the proceeds of the sales, we earnestly recommend in all cases in western Canada, where a final location of a band shall be determined upon, that each head of a family shall be allotted a farm not exceeding twenty-five acres in extent, including an allowance of wood-land where they may obtain fuel; that for such farm he shall receive a license giving exclusive occupation of the same to him and his heirs forever, on condition of clearing a certain number of acres in a given time. These documents should be so drawn as to prevent the Indians from disposing of their interest in the land, except with the consent of the government, and might be revocable on proof of habitual intemperance, or for continual neglect of the same. Further inducements might be held out to the Indians by laying out on their farms a certain proportion of the sums realized by the sale of the ceded territory. It is true that the present occupants have only a life interest in the land, but such an application of the proceeds cannot be fairly considered a misapplication of the trust, as the improvement to the property would be permanent. At first sight, the extent to which we have limited the farms may appear small; but it will be seen, from a comparison of the returns which we have received from the different local superintendents, that the average quantity of land actually under cultivation by most of the tribes of western Canada does not exceed seventeen acres, and this amount has only been reached in case of the Six Nations. We have excluded from the calculation the Mohawks of the bay of Quinté, inasmuch as the system of farming in shares is so extensively carried on by mutual arrangement between this tribe and the neighboring white population, that no correct inference can be derived from the returns of this band. The same remark also applies, although in a minor degree, to the Six Nations.

"As, however, we do not propose to interfere with either them or the Mohawks, the extent of their clearings is comparatively of little importance for the point now under consideration. The average quantity of land actually tilled by the other tribes in Captain Anderson's district does not exceed six acres; in the western district the returns show an average of upwards of fourteen acres, but this includes the Oneidas, who purchased farms already partially cleared by the whites; a portion, too, of the tilled land on the Sarnia reserve was purchased for the tribe by the government.

"It must also be remembered that the returns of the superintendents are based, in great measure, upon the calculations made by the Indians themselves of the extent of their farms; and it is easy to believe that the quantities so given are in consequence rather over than under estimated. Any one accustomed to Indian farming will remember the irregular patches of land, half covered with fallen trees and straggling patches of brushwood, which they called fields, under cultivation; and a glance at the returns of produce as compared

with the land said to be tilled, will show that we are not in error in our conclusions on this point.

"There is one curious feature connected with the advance of civilization among the Indians, which at first seems difficult to account for, namely: the taste for agricultural improvement by no means keeps pace with their progress in point of mental cultivation. In this way, in some settlements founded under the greatest advantages, the number of acres under tillage has actually diminished. The Indians live more comfortably, and their houses are more tidy, but they are less addicted to the pursuits of the husbandman.

"The explanation of this apparent anomaly we believe to be this: In the Indian's original state, his ignorance of the European languages, and the timidity natural to the savage, drive him into habits of seclusion and aversion from mixing with his white neighbors. The lands reserved for his tribe, though they no longer afford him subsistence by the chase, still give him scope for gratifying his habits of roving. When, however, he has advanced a stage, and, through the education afforded him at school, finds himself able to converse with the settlers, his shyness wears away, while his deeply rooted love of change and tastes of travel resolves itself into a desire to visit the towns and settlements within his reach, where by light manual labor he can earn a sufficient livelihood without trusting solely to his farm for support. Could we succeed in implanting habits of thriftiness we might look upon this desire for intercourse with the white man as an unmixed benefit; but the money which the Indian earns is squandered immediately; he lives better than before and dresses more respectably, but the failure of his employment leaves him in the same penniless condition as before, and he still alternates between comparative comfort and complete destitution, as he did in the days when he trusted to his bow and his traps for means of sustaining life."

The committee find some advantages in the administration of Indian affairs in Canada over our own.

There have been comparatively fewer removals of Indians, and fewer changes in the superintendents and agents employed among them. Appointments are less political in character, and the men who engage in the Indian service engage substantially for life. The most marked difference, however, grows out of the fact that among them white immigration is comparatively light, while among us the rush upon the Indian lands for settlement, and into all the valleys of the wildest mountain ranges for mines of precious metal, is beyond all precedent in history.

The difference, however, is rather in degree than in principle, which has its foundation in the contact of races. The weaker, in moral, intellectual, and physical power, is giving way before the stronger.

The difficulty is not in the laws, nor altogether in their administration. It is in the case itself.

Wherever we find the Indians of Canada, or of the United States, surrounded by white settlements, there are the same temptations, the same trials, and the same general results. When found upon the border, where settlements are so sparse and civilized society so feeble that the best of laws cannot be enforced by civil tribunals, the results of such a contact are almost beyond the power of human government to restrain.

There are three classes of white men who first come into contact with the Indian there: the missionary, who goes to convert him from heathenism to Christianity; the adventurous pioneer, seeking a new home in the wilderness; and the reckless trader, who, for a gallon of whiskey, would rob him of a whole winter's toil. No wonder that in such a struggle the red man falls. While in some instances Christianity with its elevating power leads him up to civilization, his pathway seems on every side beset by the "world, the flesh, and the devil."

In Canada, as well as among us, the ever recurring question is, what is best to be done, what can be done for the Indian?

In struggling to solve this question, of the gradual civilization of the Indians, Lord Metcalf recommends, that "Any Indian capable of passing an examination as to his industry, his education, his proficiency in a trade, and his acquaintance with the rights and duties conferred and imposed by civil society on its members, should receive a farm; this land he should hold under license of occupation for ten years, convertible into the grant of fee, either to the first occupant or his children, provided the crown were satisfied with his conduct during the interval; after such probation all protection for debt, contracted since his entry on the land, should cease, and he and his family should be deemed capable of exercising the rights and privileges, and to be liable to all the duties and charges incident to the rest of the Queen's subjects."

And again he says, speaking upon the same subject: "While, on the one hand, the lamentable experience of this continent proves that they cannot, in their present condition, cope with the whites successfully, and especially the reckless adventurers who gather around the promising settlements, it is, on the other, no less certainly their truest interest that habits of independence and self-help should be fostered among them, and the period of tutelage as much as possible curtailed. With this view I am disposed to think it advisable that the system of withdrawing from such Indians as can dispense with them all presents which tend to perpetuate a hunter's life; of requiring those who have reserves to make roads through them, and generally to assume their share of the duties and burdens of civilization, and of setting apart in said reserves lots for each family, should be persevered in. I attach, however, more importance to the establishment of industrial boarding-schools for the children of both sexes than to any other measure of this class."

The committee recommend the passage of a law to secure the following objects, viz:

1. To extend criminal jurisdiction over the Indian reservations as far as practicable.

2. To give to the agent within the reservation certain quasi judicial powers to decide all controversies arising between members of the tribe and all other persons on said reservation in criminal cases, calling upon the chiefs and headmen to sit as jurors or arbiters upon the question of guilt or innocence, and keeping a record of all proceedings, sending one copy to the secretary of the Territory, and one to the Commissioner of Indian Affairs, with a right of appeal to the Secretary of the Interior.

3. To authorize the agent to locate upon reservations head-rights for families, to be held and retained as homesteads to the family and their descendants, without any power of alienation, until they become citizens of the United States.

4. To authorize the setting apart, for every ten homesteads thus allotted to Indian families, one homestead, not exceeding one half section of land, to be occupied by a white man who is a practical farmer, a man of family, of good character, and of fair education, to be selected by that religious denomination or society to which he belongs, to be licensed with the approval of the Secretary of the Interior, said license not to be revoked except for good cause.

5. That said farmer shall be required to instruct in the English language, and in agriculture, all the Indian youths belonging to said ten families; that he shall be authorized and required to have a general superintendence of the cultivation of the lands of said ten Indian families; and for his compensation he shall be entitled to receive a just proportion of the produce over and above their support.

In special cases, and as an object to be attained by their good conduct—

6. To provide for their admission to the rights of citizenship, upon sufficient

proof in the district court of the United States of capacity, intelligence, industry, sobriety, and knowledge of the English language.

7. Not to extend beyond the periods fixed by the present treaty stipulations the payment of any money annuities to Indians ; to discountenance any such stipulations in future treaties ; and to provide mainly for industrial schools, and practical stock-raising and agriculture.

8. To encourage the establishment of missions, by various Christian denominations, among the various tribes.

9. To surrender, as soon as practicable, the control of Indian affairs within every State to the State authorities.

IN THE SENATE OF THE UNITED STATES.

MARCH 2, 1865.—Ordered to be printed.

Mr. FOSTER made the following

REPORT.

[To accompany bill H. R. 566.]

The Committee on Pensions, to whom was referred the bill (H. R. 566) for the relief of Francis Patterson, have had the same under consideration, and beg leave to report :

The petitioner applies for a pension on the ground that he is permanently and totally disabled, and unable to support his wife and family, and that two sons upon whom he was dependent for support died in the service of the United States, and in the line of duty.

The committee regard the case as meritorious, but not requiring special legislation, inasmuch as by a liberal construction of the existing law,* if the fact be fully established of the total disability of the petitioner, his wife will be allowed a pension. The committee therefore recommend that the bill do not pass.

* Act approved July 14, 1862, section 3.

IN THE SENATE OF THE UNITED STATES.

MARCH 2, 1865.—Ordered to be printed.

Mr. FOSTER made the following

REPORT.

[To accompany bill S. No. 357.]

The Committee on Pensions, to whom was referred the bill (S. 357) for the relief of Olivia W. Cannon, widow of Joseph S. Cannon, late a midshipman in the United States navy, have had the same under consideration, and beg leave to report:

By an act approved August 16, 1856, Mrs. Cannon was granted "a sum equal to five years' half-pay of her deceased husband's grade in the navy, estimated according to his pay for active service, under the act of March 2, 1835." By this act she received the sum of \$1,000, which, from an examination of the circumstances of the case, the committee are led to regard as a fair and full extinguishment of whatever claim she may have had against the government.

They therefore recommend that the bill do not pass.

IN THE SENATE OF THE UNITED STATES.

MARCH 2, 1865.—Ordered to be printed.

Mr. WILSON submitted the following

R E P O R T.

The Committee on Military Affairs and the Militia, to whom was referred a memorial of the president and the secretary of the board of commissioners of the Soldiers' National Cemetery Association, praying an appropriation to aid in the erection of a monument to the memories of the soldiers who fell in the battles of Gettysburg, have considered the same and ask leave to report.

The Soldiers' National Cemetery Association, incorporated by the State of Pennsylvania for the purpose of laying out a cemetery on the battle-field of Gettysburg for the interment of the remains of the soldiers killed in the battles at that place, or who died thereafter from wounds received in those battles, are earnestly laboring to effect that object, and with an encouraging measure of success.

The States whose soldiers fell in those battles, and whose bodies are now buried within the cemetery, have contributed about \$65,000 toward the objects in view; but, owing to the great advance in labor and the cost of materials, the association falls short of means sufficient to complete the proposed monument on the scale which its importance demands.

The board of commissioners now require \$50,000 to complete the monument, the design of which is already adopted, and they respectfully memorialize Congress to appropriate the designated amount.

The committee consider the object in behalf of which this memorial is offered to merit the earnest and patriotic consideration of the loyal people of the country.

The erection of a suitable monument at Gettysburg, to perpetuate a grateful remembrance of the brave men who gave up their lives on that battle-field in the cause of republican constitutional liberty, and to stand as a historic commemoration of one of the most sanguinary, decisive, and brilliant struggles that have crowned the valor of the federal arms in the present war, is alike a duty and a privilege—a duty appealing to the highest instincts of the patriot, and a privilege which every loyal American should feel proud to share.

The action of the States whose soldiers fell in those battles in contributing thus freely toward the objects in view has been munificent and commendable.

The committee, while they submit that your memorialists ought not to be discharged without the encouraging intimation that at some future day Congress may not decline to share in the accomplishment of this laudable undertaking, are still of opinion that regard for economy and the public welfare render it inexpedient for Congress to take present action in aid of this object, and the committee, therefore, desire to be discharged from further consideration of the memorial.

IN THE SENATE OF THE UNITED STATES.

MARCH 9, 1865.—Ordered to be printed.

Mr. TRUMBULL submitted the following

REPORT.

The Committee on the Judiciary, to whom were referred the credentials of William D. Snow, claiming to have been elected a Senator from the State of Arkansas for six years from the 4th of March instant, report :

That, in the year 1861, the constituted authorities of the State of Arkansas undertook to withdraw that State from the Union, and so far succeeded in the attempt as by force of arms to expel from the State for a time the authority of the United States, and set up a government in hostility thereto, and, in pursuance of an act of Congress, the inhabitants of said State have since been declared to be in a state of insurrection against the United States. The committee therefore recommend that the question of the admission of Mr. Snow to a seat be postponed to the next session of Congress, and until Congress shall take action in regard to the recognition of the alleged existing State government in Arkansas.



